European Commission

Period covered: 1 June - 20 July
Issued: 22 July 2013

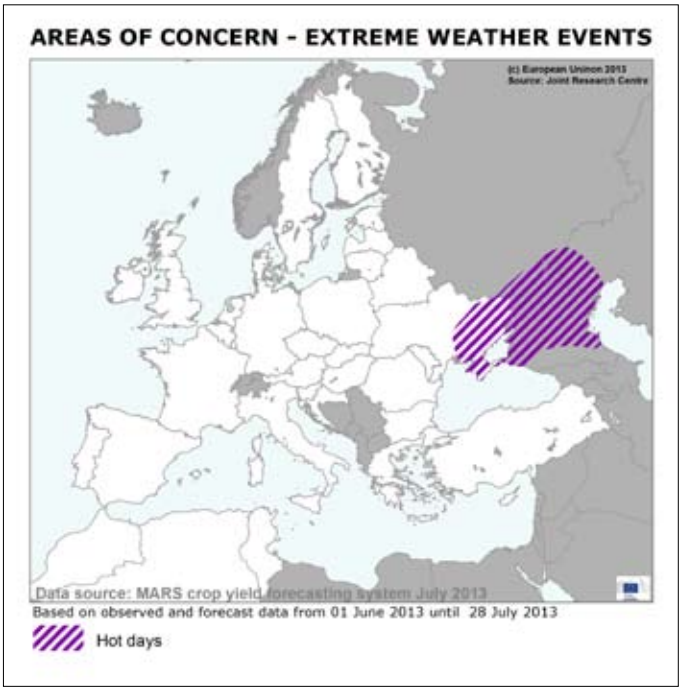
# Crop Monitoring in Europe

## MARS BULLETIN Vol.21 No. 7 (2013)

## Favourable conditions sustain good yields for EU-28

*After the heavy rains of the end of May and beginning of June, Europe experienced rather beneficial conditions for crop growth, with the exception of the plains in eastern Ukraine and neighbouring regions in Russia which experienced hot conditions coupled with scarce precipitation. In northern Italy, there is still a strong delay in the development of summer crops, leading to increased crop vulnerability.*

On balance, the EU-28 crop yield forecasts for all cereals, aside from durum wheat, were revised upwards. The yield forecast for soft wheat was raised for all EU-28 countries with the exception of Italy, Bulgaria, Finland and Greece. Durum wheat yield expectations remain clearly above average at the EU-28 level, despite a downward revision for Greece. The overall EU-28 winter barley forecast was also revised upwards due to higher forecasted yields of the two largest producers, Germany and France. EU-28 spring barley yield forecasts remain exceptionally high due to the excellent season in Spain. Rapeseed yield estimates were revised slightly upwards for the EU-28, but are still forecast to be below last year's level. The EU-28 forecast for grain maize was revised slightly upwards, thanks to an increased yield forecast for Bulgaria, and continues to be clearly above last year's yield. Yield forecasts for sugar beets were revised downwards.




| Crop | Yield t/ha | | | | |
|---|---|---|---|---|---|
| | 2012 | MARS 2013 forecasts | Avg 5yrs | %13/12 | %13/5yrs |
| **TOTAL CEREALS** | 4.87 | **5.32** | 5.07 | +9.1 | +5.0 |
| **Total Wheat** | 5.19 | **5.45** | 5.37 | +5.0 | +1.5 |
| *soft wheat* | 5.42 | **5.69** | 5.62 | +4.9 | +1.2 |
| *durum wheat* | 3.13 | **3.33** | 3.21 | +6.2 | +3.8 |
| **Total Barley** | 4.38 | **4.78** | 4.39 | +9.1 | +8.9 |
| *spring barley* | 3.91 | **4.33** | 3.83 | +10.9 | +13.3 |
| *winter barley* | 5.21 | **5.48** | 5.25 | +5.1 | +4.5 |
| **Grain maize** | 6.08 | **7.22** | 6.99 | +18.9 | +3.3 |
| **Rye** | 3.72 | **3.73** | 3.34 | +0.1 | +11.7 |
| **Triticale** | 4.18 | **4.15** | 4.06 | -0.6 | +2.3 |
| **Other cereals** | 3.32 | **3.59** | 3.31 | +8.0 | +8.6 |
| **Rape and turnip rape** | 3.11 | **3.08** | 3.04 | -1.1 | +1.2 |
| **Potato** | 30.61 | **31.65** | 30.60 | +3.4 | +3.5 |
| **Sugar beet** | 69.72 | **70.14** | 69.71 | +0.6 | +0.6 |
| **Sunflower** | 1.68 | **1.92** | 1.86 | +14.5 | +3.4 |

issued 19 July 2013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2 Remote sensing analysis
3 Country analysis
4 Crop yield forecasts - EU-28 and neighbouring countries
5 Pasture analysis – update
6 Rice analysis
7 Atlas maps



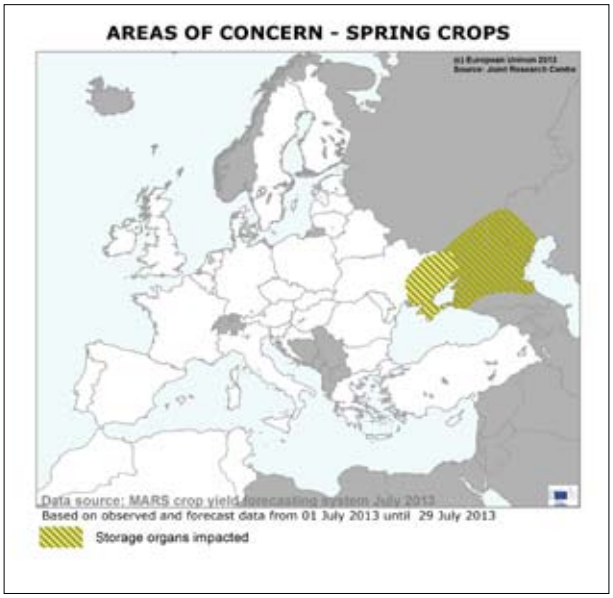
Joint Research Centre

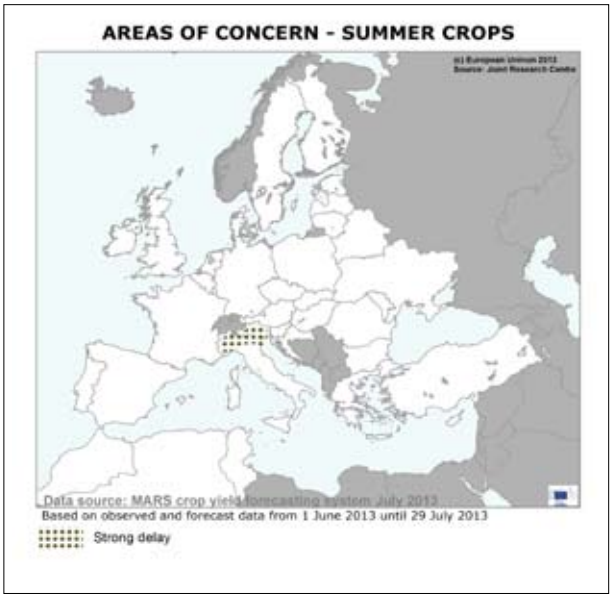
# 1. Agro-meteorological overview

## 1.1 Areas of concern

*After the heavy rains of the end of May and beginning of June, Europe experienced rather beneficial conditions for crop growth, with the exception of the plains in eastern Ukraine and neighbouring regions in Russia which experienced hot conditions coupled with scarce precipitation. As a consequence the grain-filling phase was unfavourably shortened. In northern Italy, there is still a strong delay in the development of summer crops, leading to increased crop vulnerability.*





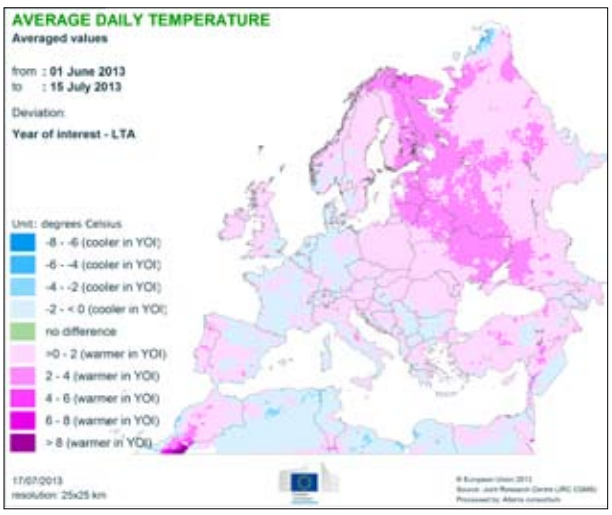
# 1.2 Agro-meteorological review (1 June – 15 July)

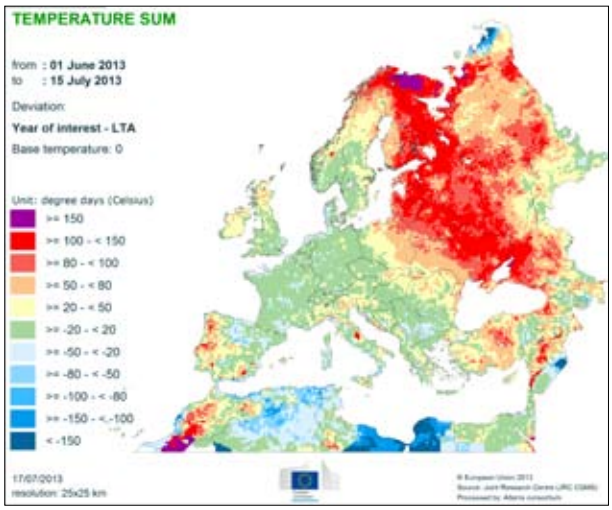
*Above-average air temperature conditions were observed over major parts of Europe. Heat waves occurred over the south-western part of Russia, the southern Balkans, western Turkey and the Iberian Peninsula. Abundant rainfall conditions were observed over the south-eastern part of Germany, Austria, the Czech Republic, Poland, Scandinavia, the south-western part of France, and eastern and northern Black Sea regions. Drier-than-usual conditions occurred over eastern Europe, northern Italy, the northern Balkans, the central part of the Iberian Peninsula, the central part of France, the Benelux countries, the central part of Germany and the British Isles.*

## Observed temperatures

During the first dekad of June, negative average temperature anomalies in the range of -2 to -4°C were recorded in Spain, western Mediterranean regions, southern Germany, eastern England, the Czech Republic, Austria, Hungary, and the western and northern parts of the Balkan Peninsula. Above-average temperatures were recorded in eastern and northern Europe: in Russia, Belarus, the Baltic countries, northern Ukraine, Finland and northern Scandinavia. These warmer-than-usual conditions continued during the second dekad of June in eastern Europe. During this period, above-average temperatures were also recorded in central Europe, Italy, eastern France and the Balkan Peninsula. In Austria, southern Germany and the Czech Republic, average temperatures exceeded the long-term average by 4-6°C. Colder-than-usual temperatures continued over the western part of the Iberian Peninsula. The third dekad of June was characterised by strongly contrasting temperature conditions over Europe. Average daily temperatures were higher than the long-term average in eastern and northern Europe, the eastern part of Poland, Turkey and the western part of the Iberian Peninsula, whereas colder-than-usual conditions predominated in central and western Europe and the western Mediterranean. Average daily temperatures over the Baltic countries, Finland and north-western Russia exceeded the long-term average by between 4°C and 6°C, whereas colder-than-usual conditions by 2°C to 4°C occurred over France, Germany, northern Italy, Spain, Switzerland, Austria and the Czech Republic. Warmer-than-usual conditions continued over eastern Europe during the first half of July, with average daily temperatures 2-4°C above the long-term average in Russia and the eastern part of Ukraine. Significantly warmer-than-usual temperatures were also recorded over the western part of the Iberian Peninsula, with average daily temperatures up to 8°C above the long-term average. The temperature sum for the period as a whole (1 June to 15 July) exceeded the long-term average by more than 100 growing degree days (GDD) over eastern Europe and the Baltic Countries and Finland. A slight delay in crop development can be observed for summer crops over France, the northern part of the Iberian Peninsula and the Benelux countries. A delay in the crop development stage can still be observed for winter crops over France, Germany, the Benelux countries and the British Isles.

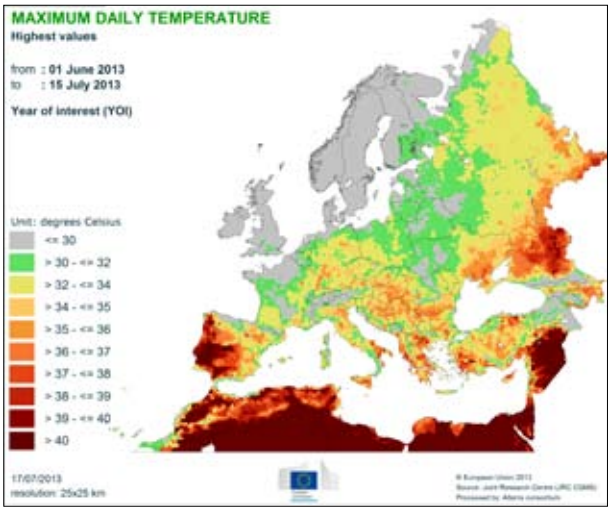
More than four heat waves occurred during the analysis period over the south-western part of Russia, eastern parts of Ukraine, Moldova and Romania and the southern part of the Iberian Peninsula. The longest heat waves were recorded in south-western Russia, Greece, the western part of Turkey and the southern part of the Iberian Peninsula. Maximum daily temperatures of over 30°C occurred for more than 25 days over these regions during the analysis period. Maximum daily air temperatures reached between 38°C and 40°C in the south-western part of Russia, and between 40°C and 42°C in the south-western part of the Iberian Peninsula.

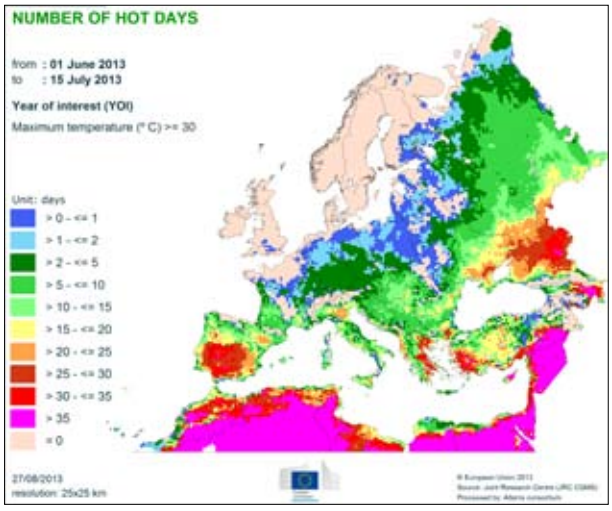


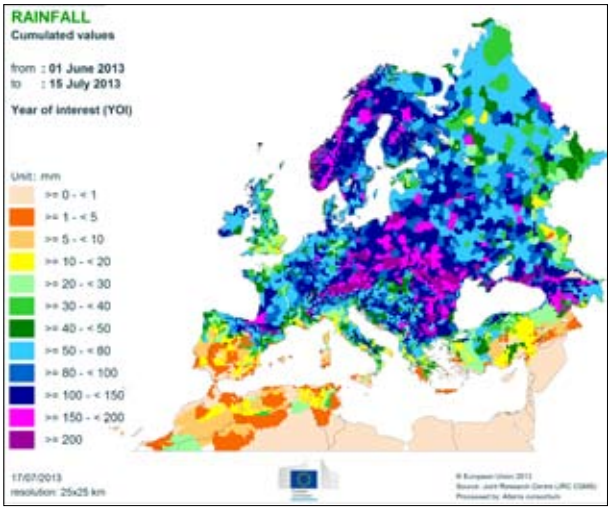



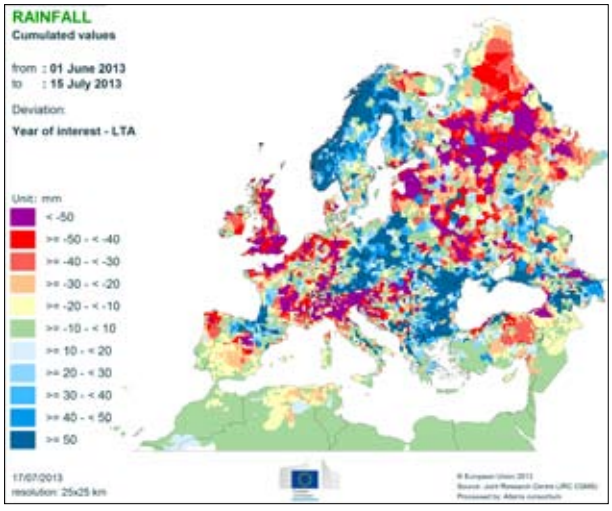
## Observed rainfall

During the first dekad of June, lower-than-usual precipitation occurred in northern and central France, the British Isles, the Benelux countries, northern Germany, Denmark, western Italy and Russia. In particular, a lack of rainfall was recorded in northern Germany, the Benelux countries, the south-eastern part of the UK, Denmark, southern Spain and southern Italy. In contrast, exceptionally high rainfall, exceeding the long-term average by more than 100 mm, was experienced in large areas of Germany, Austria and the Czech Republic, causing local flooding and widespread waterlogging. These conditions contributed to poor soil aeration and have likely affected crop growth, especially of summer crops. Poland and Belarus also experienced high rainfall levels during this period, generally exceeding the long-term average by between 50 and 100 mm. The second dekad of June was characterised by drier-than-usual conditions over northern Italy, Austria, Slovenia, Croatia, Hungary, Belarus, northern Poland and the Baltic countries. Cumulated rainfall over this period exceeded the long-term average in western and northern France, northern Germany and part of the Black Sea region. During the third dekad of June, wet conditions continued over the western Black Sea regions, with rainfall exceeding the long-term average by more than 50 mm in Moldova, the eastern part of Romania, the western part of Ukraine and Bulgaria. Above-average rainfall also occurred over Poland, Austria, the Czech Republic and the southern part of Scandinavia. The first half of July was characterised by drier-than-usual conditions over northern Italy, southern Germany, the Czech Republic, the central part of Ukraine, the western part of France and the British Isles. Rainfall locally exceeded the long-term average by between 50 and 100 mm over the northern Black Sea regions and the northern part of Poland. Normal rainfall conditions were observed elsewhere.



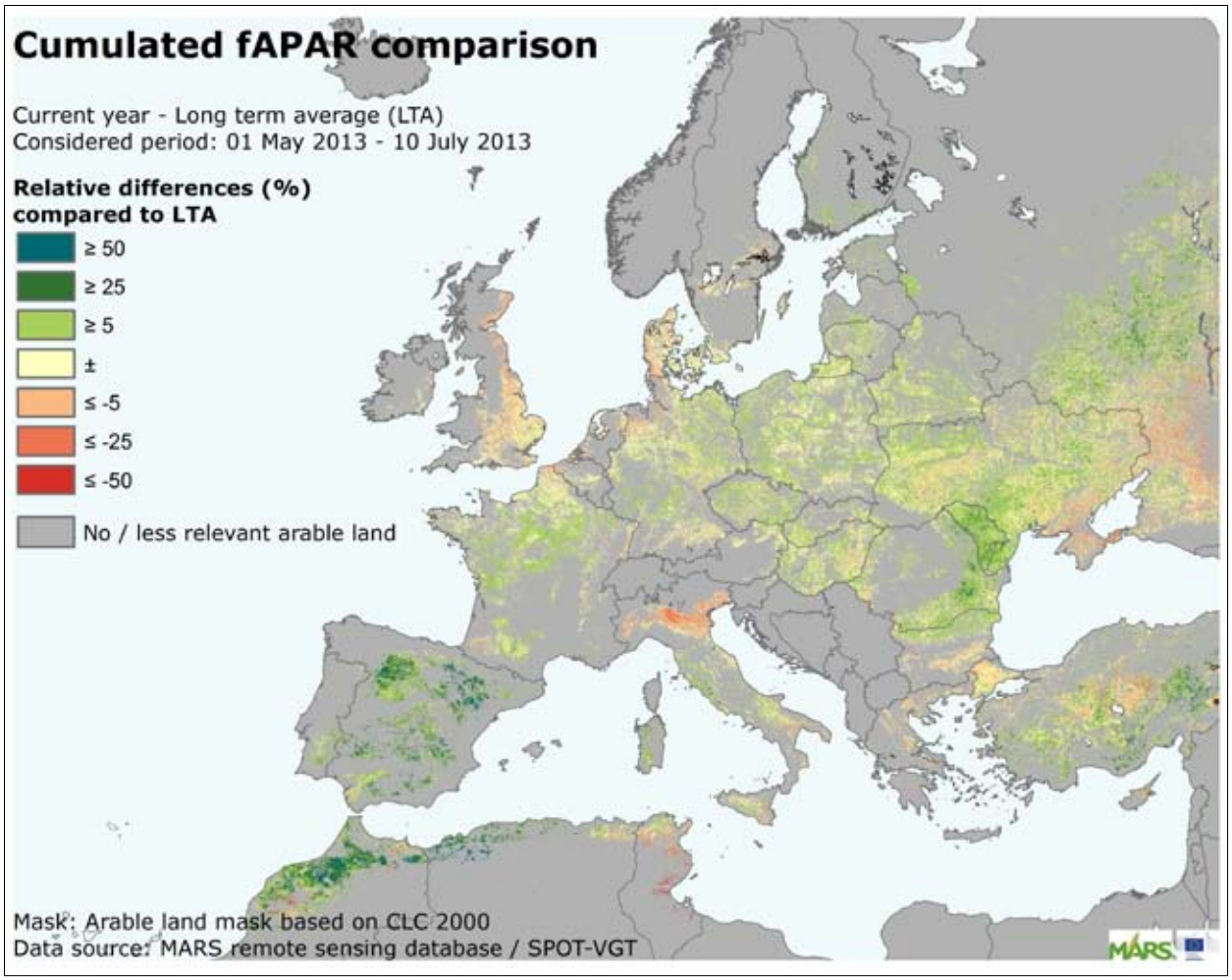



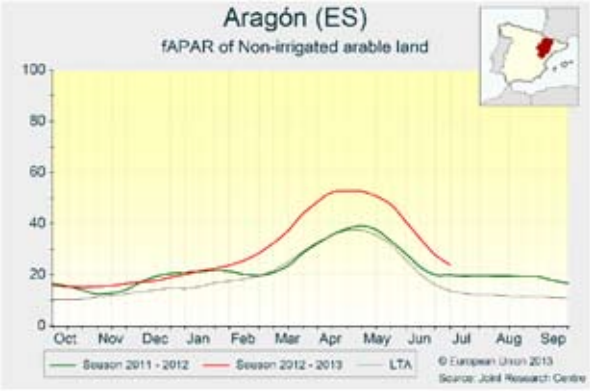



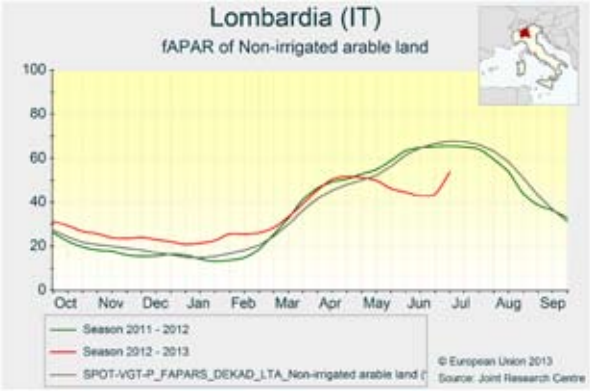
# 2. Remote Sensing analysis – observed canopy conditions

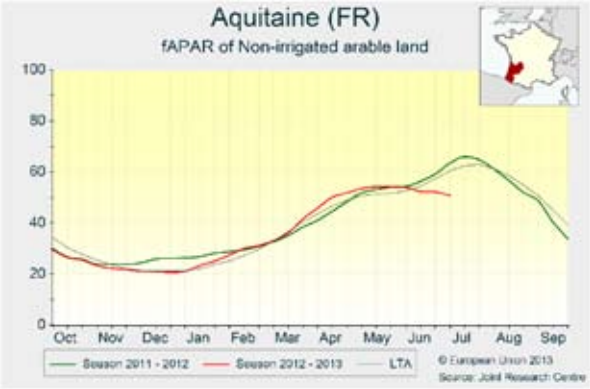
## Lack of biomass accumulation recovered in western Europe. Excellent season in the Iberian Peninsula. Persistent delay in summer crop development in northern Italy

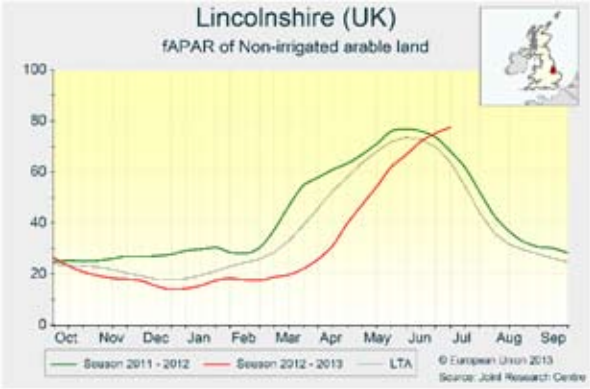


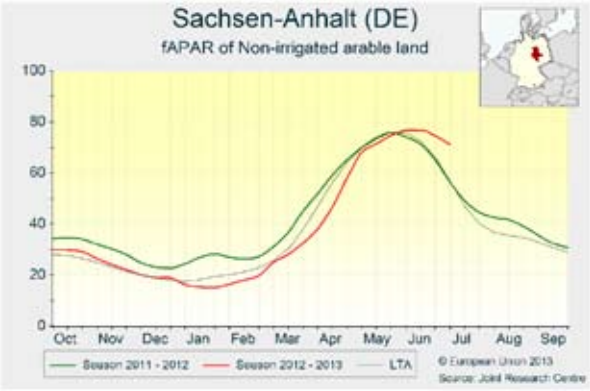

The map displays the cumulated values of fAPAR (fraction of Absorbed Photosynthetically Active Radiation) from the beginning of May to 10 July compared to the same values in a long-term average year (LTA / 1998 – 2012). On the map, the positive anomalies are shown in green and negative ones in red. In the **Iberian Peninsula**, winter crops were harvested almost everywhere after an exceptional good season (e.g. in *Aragon*). The development of summer crops is slightly delayed due to lower-than-normal temperature accumulation in June. In **Italy**, the main agricultural districts in the north are still facing a difficult season. Winter crops have been harvested and the yield is expected to be lower than average. The canopy development of summer crops is significantly delayed (e.g. in *Lombardia*) with a huge regional variation across the Po valley. In **France**, the winter crops in the north have past the flowering phase and senescence has started almost everywhere; the lack of overall biomass accumulation is now being recovered. The main maize regions in southern France were subjected to excess precipitation in the past weeks, which hampered sowing and canopy development (e.g. *Aquitaine*). In the **United Kingdom**, winter crops did not recover the strong delay but the overall biomass accumulation is now close to or even slightly higher than normal (e.g. in *Linconshire*). In **Germany**, the senescence of winter crops started with a slight delay compared to average. The lack of biomass registered during spring has been completely recovered while the heavy rains of June seem not to have had a serious effect on the crop canopy (e.g. *Sachsen-Anhalt*). In the **Pannonian Plain**, the winter crops season has almost finished and summer crops are at the flowering stage. Biomass accumulation is persistently above average (e.g. in *Severen Tsentralen*). In **Ukraine**, the high temperatures of June determined an acceleration of the canopy development and an above-average accumulation of biomass accumulation (e.g. in *Kirovohrads'ka*). As consequence, the crops in the east have matured early, leading to a possible reduction in yields. In **Russia**, the early senescence is due to a combination of high temperatures and low soil moisture; precipitation has been scarce since the beginning of spring (e.g. in *Rostovskaya*).

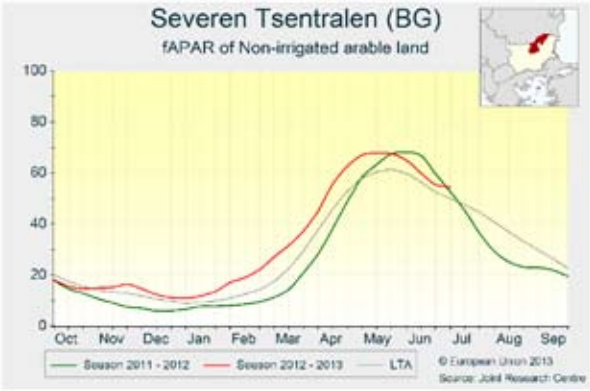

Aragón (ES)
fAPAR of Non-irrigated arable land
100
80
60
40
20
0
Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep
Season 2011 - 2012
Season 2012 - 2013
LTA
© European Union 2013
Source: Joint Research Centre


Lombardia (IT)
fAPAR of Non-irrigated arable land
100
80
60
40
20
0
Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep
Season 2011 - 2012
Season 2012 - 2013
SPOT-VGT-P_FAPARS_DEKAD_LTA_Non-irrigated arable land
© European Union 2013
Source: Joint Research Centre


Aquitaine (FR)
fAPAR of Non-irrigated arable land
100
80
60
40
20
0
Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep
Season 2011 - 2012
Season 2012 - 2013
LTA
© European Union 2013
Source: Joint Research Centre


Lincolnshire (UK)
fAPAR of Non-irrigated arable land
100
80
60
40
20
0
Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep
Season 2011 - 2012
Season 2012 - 2013
LTA
© European Union 2013
Source: Joint Research Centre


Sachsen-Anhalt (DE)
fAPAR of Non-irrigated arable land
100
80
60
40
20
0
Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep
Season 2011 - 2012
Season 2012 - 2013
LTA
© European Union 2013
Source: Joint Research Centre


Severen Tsentralen (BG)
fAPAR of Non-irrigated arable land
100
80
60
40
20
0
Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep
Season 2011 - 2012
Season 2012 - 2013
LTA
© European Union 2013
Source: Joint Research Centre


Kirovohrads'ka (Ukraine)
fAPAR of Non-irrigated arable land
100
80
60
40
20
0
Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep
Season 2011 - 2012
Season 2012 - 2013
LTA
© European Union 2013
Source: Joint Research Centre


Rostovskaya Oblast (Russian Federation)
fAPAR of Non-irrigated arable land
100
80
60
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Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep
Season 2011 - 2012
Season 2012 - 2013
LTA
© European Union 2013
Source: Joint Research Centre

# 3. Country analysis

## 3.1 European Union

*On balance, the EU-28 crop yield forecasts for all cereals, aside from durum wheat, were revised upwards. The yield forecast for soft wheat was raised for all EU-28 countries with the exception of Italy, Bulgaria, Finland and Greece. Durum wheat yield expectations remain clearly above average at the EU-28 level, despite a downward revision for Greece. The overall EU-28 winter barley forecast was also revised upwards due to higher forecasted yields of the two largest producers, Germany and France. EU-28 spring barley yield forecasts remain exceptionally high due to the excellent season in Spain. Rapeseed yield estimates were revised slightly upwards for the EU-28, but are still forecast to be below last year's level. The EU-28 forecast for grain maize was revised slightly upwards, thanks to an increased yield forecast for Bulgaria, and continues to be clearly above last year's yield. Yield forecasts for sugar beets were revised downwards.*

## France

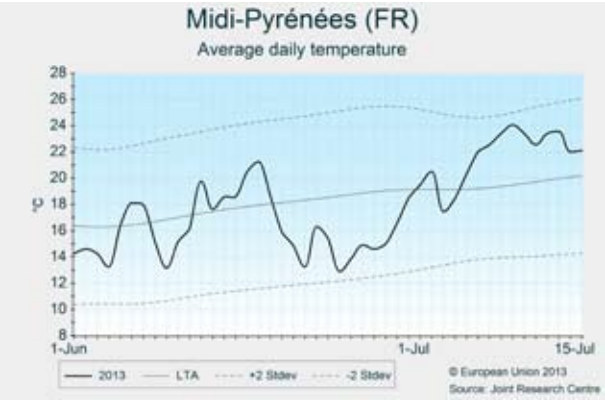
### Crops are still delayed but meteorological conditions lead to improved yield forecasts

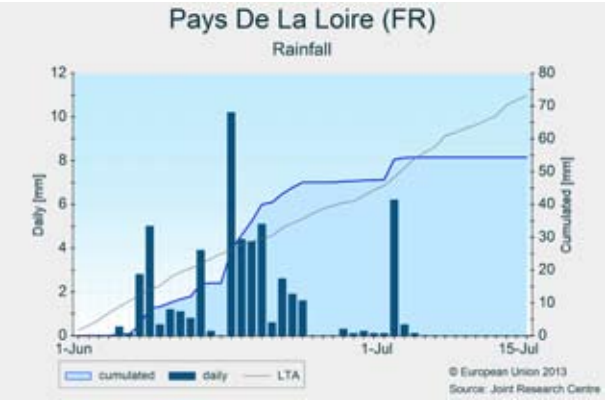
*Average temperatures are close to normal since the beginning of June. There is still an appreciable delay but crops are benefiting from milder temperatures and high soil moisture content. Thus, yields are revised upwards compared to the previous forecast.*

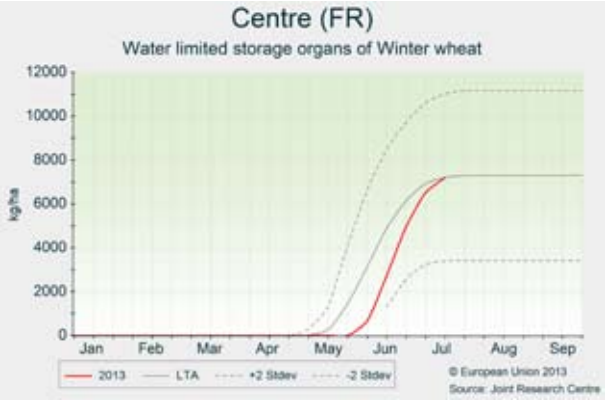
After a cold and rainy spring in most regions, conditions since the beginning of June are optimal while crops are reaching decisive development stages. The cumulated sum of temperatures since the beginning of June is close to the normal for the season. The last dekad of June was characterised by temperatures 3°C below the average in most regions, except in the north. Temperatures during the first half of July were slightly above average. After a rainy spring in the southern half of the country, precipitation eased from June onwards. However, two days with heavy storms (more than 30 mm) were recorded in Aquitaine. These unusually wet conditions have hampered farm activities and maize sowings have been negatively affected.

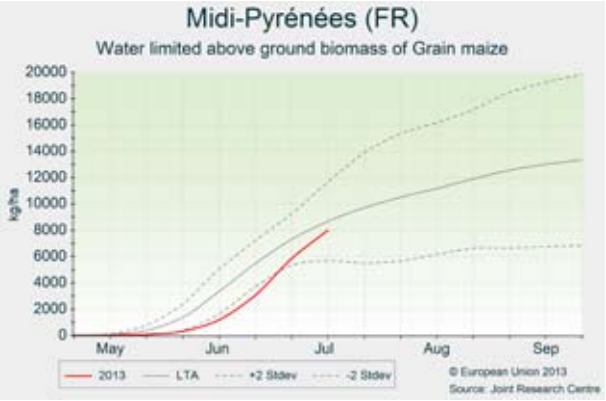
The delays in crop development incurred during spring, as reported in previous bulletins, is still appreciable for all major crops but the slightly above-average temperatures since the beginning of July are now ensuring optimal growing conditions. Soft wheat and barley are benefiting from these conditions as the harvesting season approaches.

Yields are expected to be slightly below the average for sunflower and maize crops due to the delay and overly wet conditions in *Aquitaine* and *Midi-Pyrénées*. By contrast, durum wheat is benefiting from the higher-than-usual soil moisture content in the south. Dry conditions in the north are expected to slightly reduce potato yields.



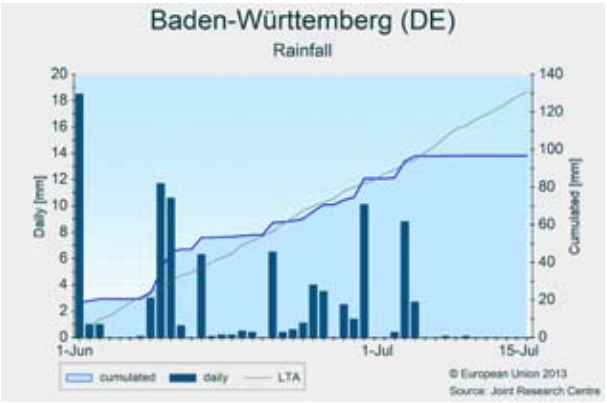



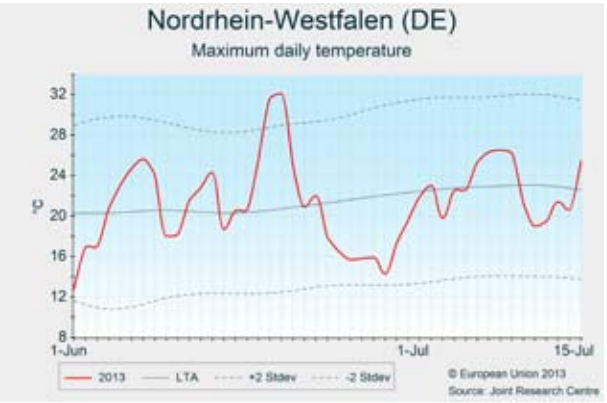
# Germany

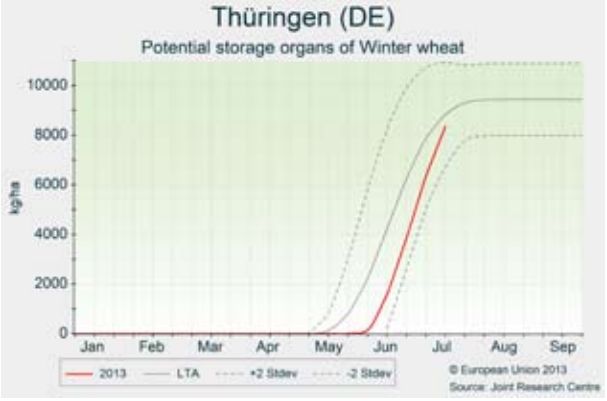
## Good conditions for grain filling of winter cereals

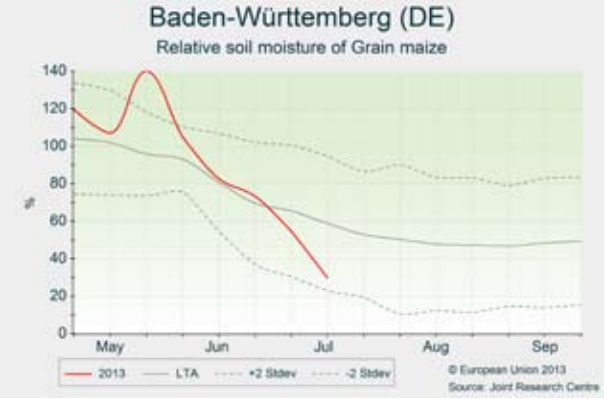
*Due to favourable weather conditions for winter and spring cereals during the past weeks, yield forecasts have been revised upwards since the last Bulletin. Mediocre yields are forecast for maize and tuber crops.*

Since the 1st of June, seasonal temperatures are recorded with a few hot days (2-5) around 18 June, foremost in the south of the country. Consequently, temperature accumulation was normal and sustained a steady growth, but for the more thermophile crops such as maize, warmer temperatures would have been beneficial. Rain was well distributed in June after the exceptionally heavy rainfall events towards the end of May and beginning of June. As a consequence of the high water inputs, soil moisture levels in large parts of the country (*Sachsen, Bayern, Baden-Wuerttemberg*) were often higher than field capacity. Over prolonged periods this would have created problems for plant development due to nutrient leaching and decreased access of roots to air. This is especially true for the tuber and maize crops that suffered more than winter and early-sown spring cereals and for which only mediocre yields are currently forecast. Since the beginning of July dry but not too hot weather conditions persist providing good conditions for the grain filling of winter and spring cereals. As a result, the growth cycle of winter and spring cereals was not unfavourably shortened and consequently yield forecasts for winter and spring cereals were raised compared to our last bulletin, and are now well above average. The harvesting is about to start later than usual as the delay caused by the cold spring was only partially compensated. Soil moisture contents are depleting rapidly now, but as winter cereals are almost mature we do not expect severe negative effects. By contrast, more rain would be needed to sustain maize yields, but a dry period is forecast and yield potentials remain highly vulnerable.



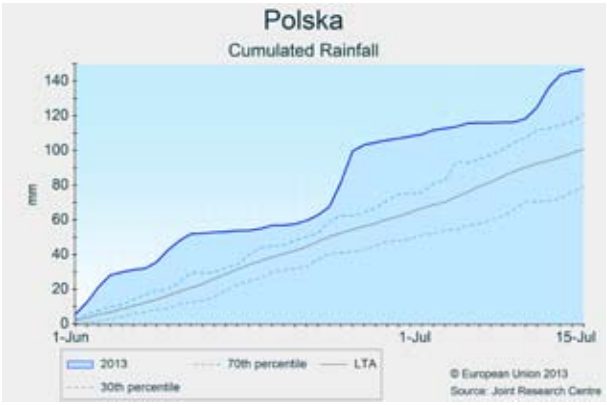
# Poland

## Persistent abundant rainfall

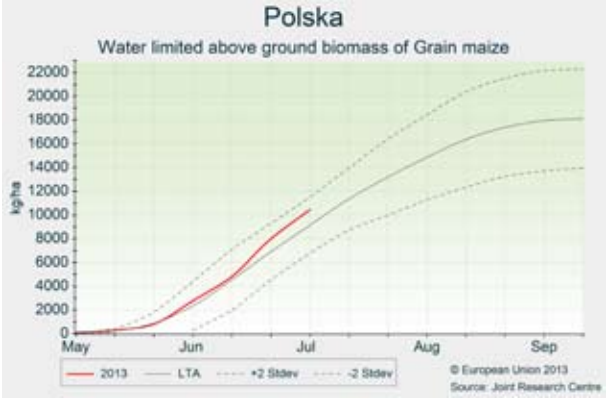
*Mild weather accompanied by abundant rainfall and above-average radiation created very good conditions for crop growth and development, leading to an upward revision of yield forecasts for all crops.*

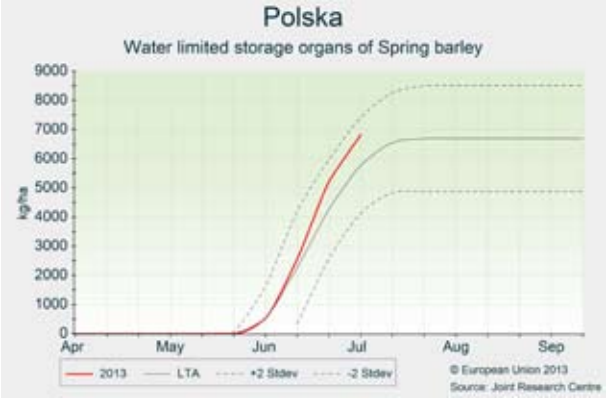
Abundant rainfall persisted during the period analysed, characterising this growing season as wet. The negative impact of overly wet soils has been minimised by increased temperatures. The mild weather and higher-than-usual soil moisture content is accompanied by above-average solar radiation, which result in very good conditions for crop growth and development. Most crops responded to these favourable conditions with increased biomass accumulation. Winter rapeseed and winter barley are in the ripening stage and have reached full maturity in some regions. Our rainfall forecast for the coming days is for low - to moderate precipitation levels, that will create favourable conditions for the harvesting of these crops. Other winter crops are still in the grain-filling stage, meaning that the good weather brings direct benefits to their yields. Spring crops are also growing well, overcoming the delays incurred during the start of the season, and promising very good yields.

Our yield forecast for all crops is based on crop simulations. Favourable weather and intensive crop growth boosted our yield predictions for all crops. The current yield forecast is higher than the five-year average; and the yield forecast for most winter cereals is set above last year's very good yield levels.







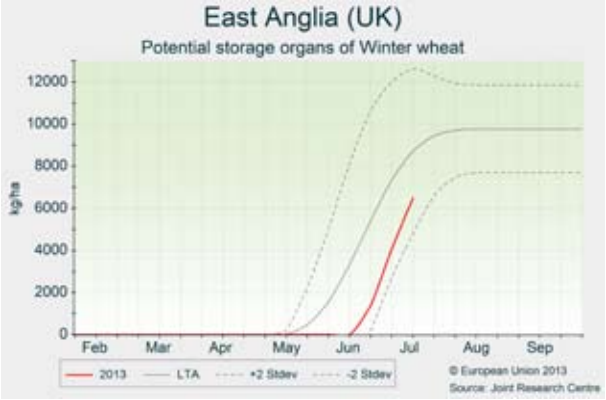



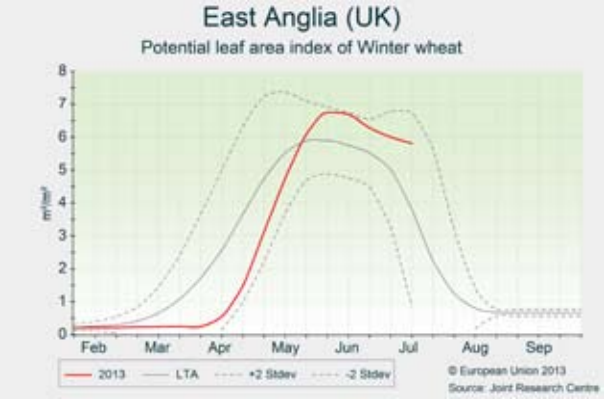
# United Kingdom and Ireland

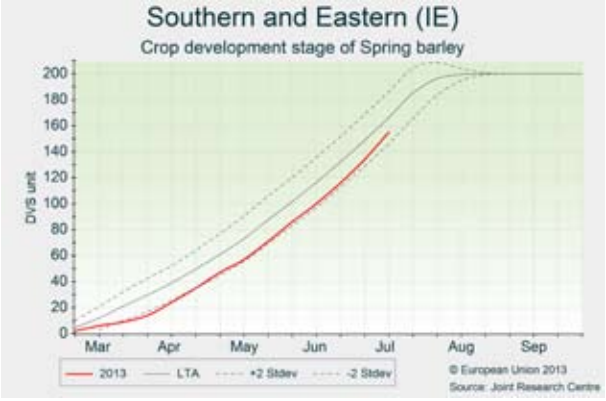
## Mildly positive outlook

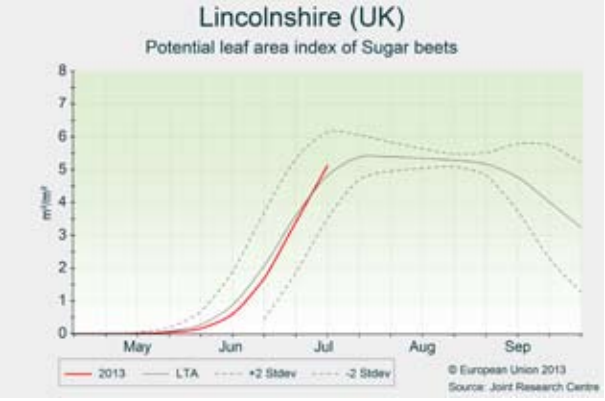
*With relatively dry days and mild temperatures, the period from 1 June until 15 July has brought favourable conditions for crop growth that improve the outlook for reasonable yields.*

Although some events of higher rainfall intensity have been recorded, rainfall levels have been generally low during this period. Ideally crops would benefit from well-distributed light night-time showers in the coming weeks, but there is little risk of drought stress, except on the more shallow soils. June was slightly colder than usual in England, but slightly warmer in Scotland and Ireland. Temperatures increased substantially in July in the UK and Ireland. If high temperatures continue, yields could be affected negatively, due to the shortening of the grain-filling period. According to our simulations, this seems to have already occurred in Scotland and Ireland where development of cereals was accelerated by the warmer temperature. Elsewhere, the season is still delayed by about two weeks, but biomass accumulation seems to be reaching normal or higher-than-normal levels according to crop model simulations and remote sensing observations. If favourable weather remains for the next weeks, the only negative effect will be a late harvest (which might complicate sowings for the next season). The cereal yield forecast was revised upwards (closer to the average) for the UK, but not for Ireland where conditions have been less favourable. Potatoes and sugar beets are faring well in the UK, with average-to-good yield prospects. Winter rapeseed is still difficult to predict due to the strong diversity of situations mentioned in previous bulletins (wide range of development stages reported on the ground, abandoned crops, etc.), but the yield outlook remains below average.



# Spain and Portugal

## Harvesting of winter and spring cereals continues with optimal yields

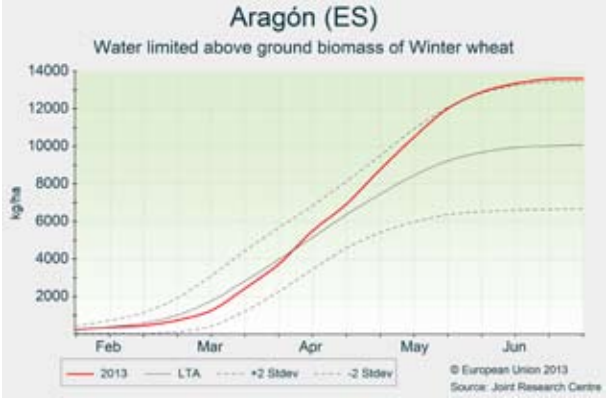
*Favourable weather conditions - warm temperatures and scarce rainfalls– are being experienced during the ripening and harvesting periods of wheat and barley. Yield expectations for these crops are among the highest ever.*

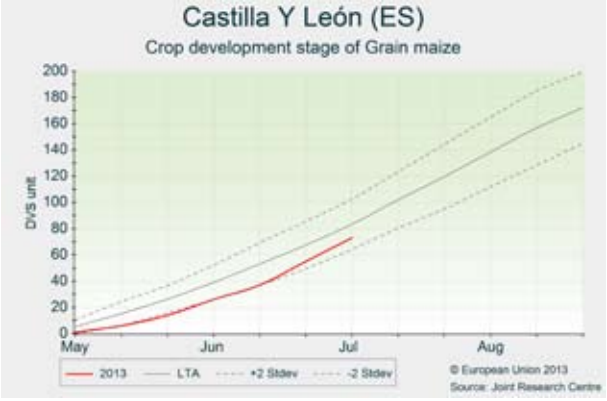
Across the Iberian Peninsula, a general increase in temperatures has been observed during the past month, ending the prolonged period of chilly temperatures that started in early spring. Especially from the end of June, daily averages were about 3°C above average in central Spain and up to 7°C above average in the Atlantic basin (*Centro* and *Norte* in Portugal, *Galicia* in Spain). During the June-July period, the rainfall registered has been scarce, although episodic thunderstorms have been observed in the north of *Castilla y Léon* and *Aragon* during the last half of June.

These meteorological conditions have benefited the harvesting of wheat and barley, which has almost finished in the south (*Andalucia*, *Alentejo*), and which is quite advanced in the centre (*Castilla La Mancha*) and in the north east (*Aragon*, *Cataluña*). In *Castilla y Léon*, harvesting has recently started under positive conditions, albeit with a two-week delay. In all these regions, favourable weather during spring and summer, with abundant rainfall and temperatures that were slightly colder than usual, resulted in high biomass accumulation and optimal grain filling of soft wheat and spring barley. The yield expectations, based on the analysis of satellite images and crop model indicators, are exceptionally high, which suggests that this could be one of the best seasons ever for winter and spring cereals in the Iberian Peninsula.

By contrast, summer crops present a delay in their vegetative development, directly linked to the cold temperatures registered in late spring, especially in the north. The increase in temperatures over the past weeks will improve their development. As water availability in the reservoirs is high, the irrigation period is expected to continue with no constraints for maize, sugar beets and potato.





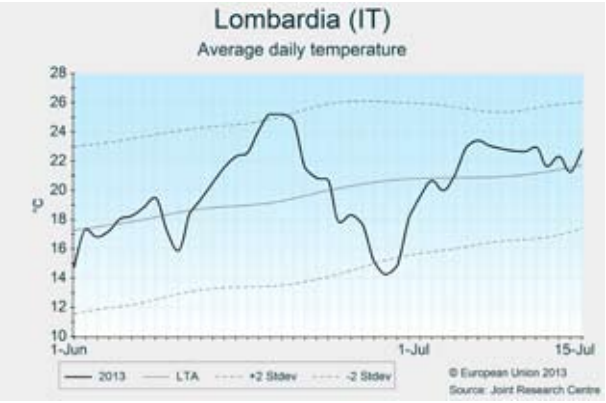



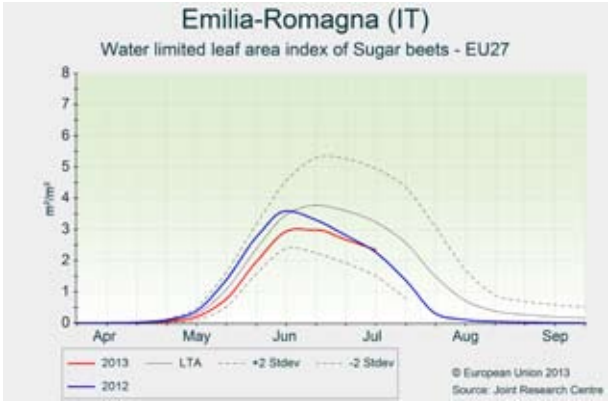
# Italy and Slovenia

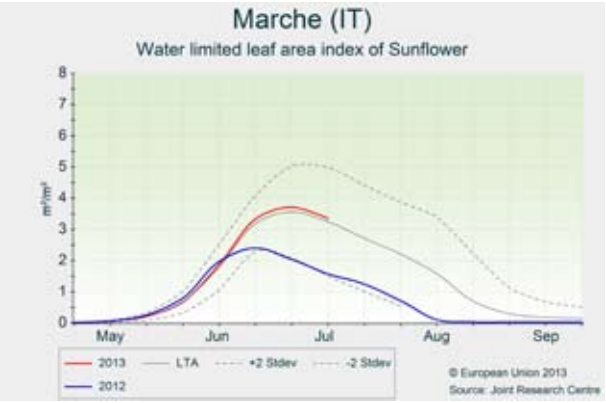
## Maize and soft wheat yields revised slightly downwards

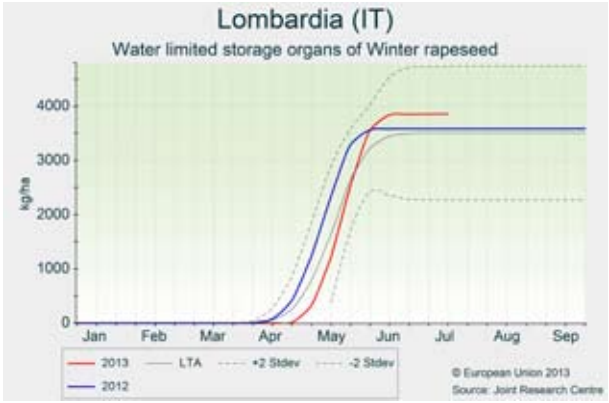
*The harvesting of winter cereals has been completed. Cumulated rainfall during the past few months has assured a good reserve of water in the soil for spring crops. However, maize and sugar beet crops are vulnerable as the strong delay in crop development has not been compensated..*

During June, average temperatures remained slightly below average with the exception of a few days' positive thermal anomaly around the 20th of the month. Normal thermal conditions were observed during the first dekad of July. Below-average rainfall was recorded. Due to the unstable atmospheric conditions, mainly in northern and central regions, some rainfall events were rather heavy with short but strong thunderstorms. The rainfall cumulated over the previous months has assured a good reserve of soil water and therefore the risk of water shortages for summer crops is expected to be small. For maize the significant delay in crop development due to late sowing and poor start of the season has not been compensated, and crops are therefore highly vulnerable. Furthermore, cold and wet conditions recorded during the sowing period and the different cultivars sown have led to strong differences in the phenological stages of crops; e.g. in the same area of cultivation some maize fields are still at an early vegetative stage, whereas in others flowering has started. A very strong delay in crop development is also observed for sugar beets, with a simulated crop leaf area index below average, particularly in *Emilia Romagna* and *Veneto*. The yield forecasts for both crops were revised slightly downwards. By contrast, above-average yields are expected for sunflower crops (mainly confined to central Italy), which are at the flowering stage and which show values of simulated biomass above the average. Our models confirm the forecasted near-average rapeseed and durum wheat yields. The harvesting of soft wheat was completed at the beginning of July. The yield forecast is revised slightly downwards because the persistent cold and wet conditions recorded during the spring and up until the first dekad of June affected the grain-filling process and caused an increase in fungal diseases, mainly in northern Italy.



# Hungary

## High yields are forecast for winter cereals

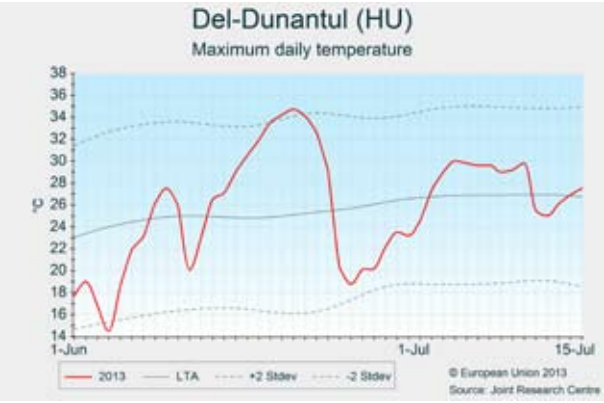
*Thermal conditions were near optimal with the only exception of a short heat wave in June. Precipitation was less than usual, but the soil moisture content is still sufficient. Growth and development of summer crops is adequate. The yield outlook for winter cereals is good, but that for spring barley was revised downwards. Harvesting started, supported by dry weather.*

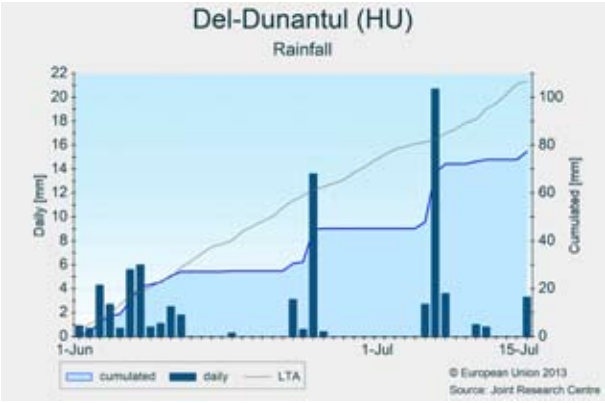
In the first half of June, weather conditions were moderately colder than usual. A short heat wave occurred from 16-23 June, with daily maximum temperatures of over 30°C, even reaching 34-35°C around 20 June. As the soil moisture content was adequate and the hot spell was short, no significant damage was caused to small grain cereals. After a sudden drop in temperatures by 15°C during the last week of June, thermal conditions remained in the normal range during the first dekad of July. The precipitation sum was below average in June and July, but the soil moisture content remained sufficient to fulfil the water demand of crops, since the soil was well replenished in May.

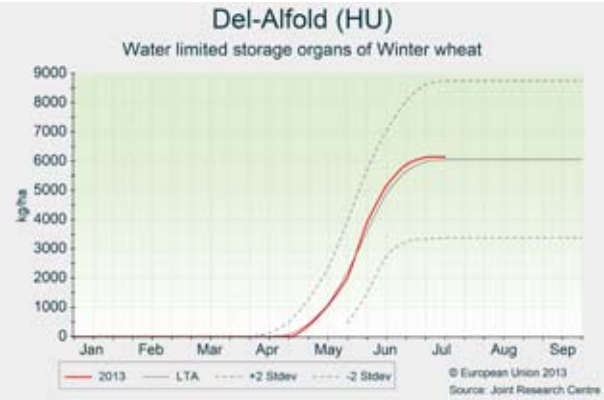
This moderately warm weather was especially favourable for winter wheat and winter barley, providing near-optimal conditions during the grain-filling stage. The expectations for spring barley yields are moderate since the growing conditions were suboptimal due to the late/delayed sowing.

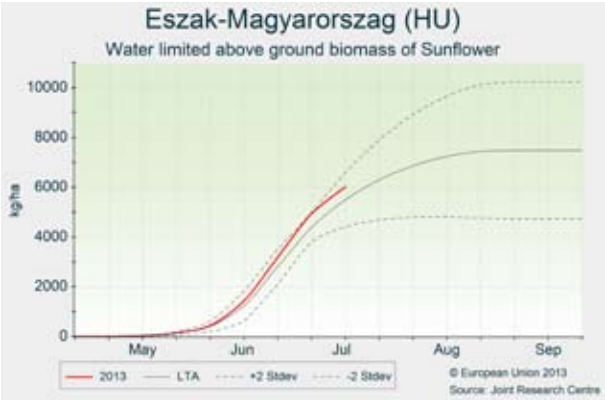
The simulated storage organ weight of winter cereals and rapeseed considerably exceeds the long-term average, and high yields are forecast. Winter cereals are mature in the southern and eastern regions.

The phenological development and canopy extension of summer crops is normal, coupled with above-average biomass accumulation. Consequently, yield expectations are positive. Sunflowers and grain maize are in the flowering and grain-filling stages, so rains would be beneficial to sustain the current yield potential.



# Romania

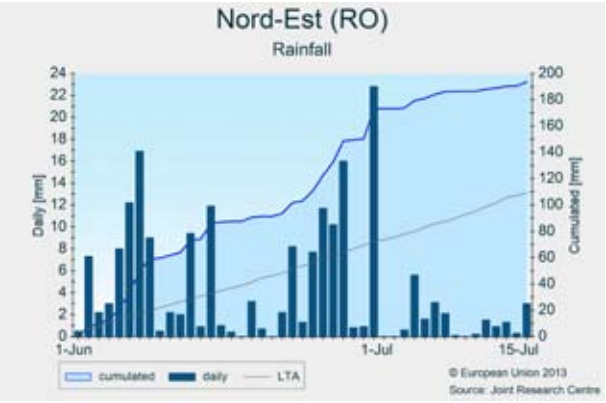
## Exceptional biomass accumulation of maize and sunflower crops

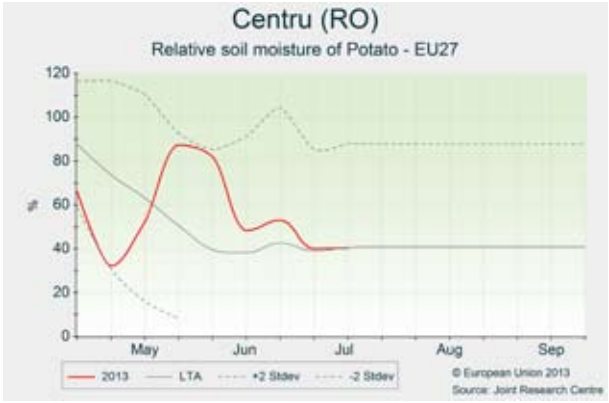
*The harvesting of winter cereals and rapeseed started 15-30 days earlier than usual this year, but harvesting activities were interrupted by heavy rains in late June, which also affected grain quality. The yield outlook for winter cereals exceeds not only the results of 2012 (which was a dry year) but is also considerably higher than the average for the past five years. Summer crop conditions are good and the cumulated biomass is exceptionally high.*

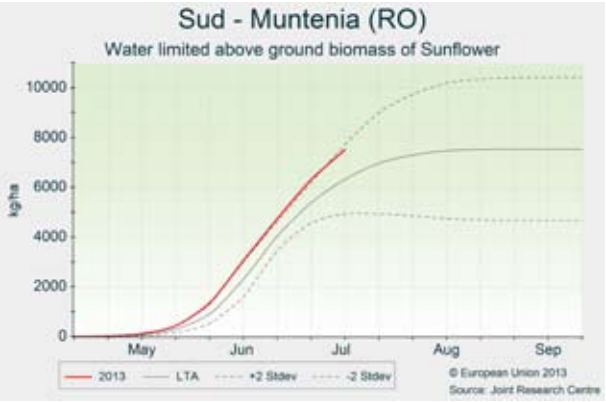
Temperatures mostly fluctuated around average except for the period from 16 until 25 June, when the thermal anomaly reached +4-6°C. Five to seven hot days (Tmax>30°C) were recorded, with daily maximums of 35-37°C.

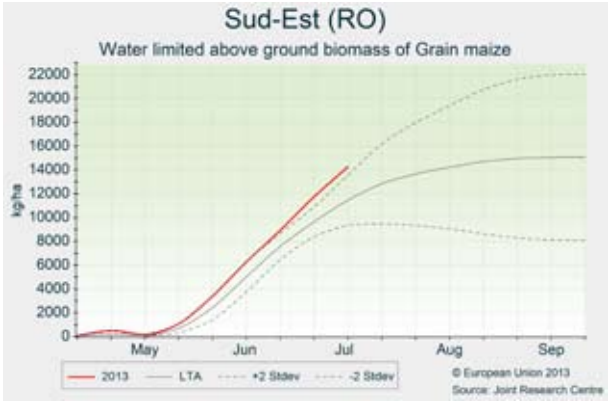
Areas along the Hungarian border received normal amounts of rainfall, but in eastern and southern territories of Romania, including *Nord-Est*, *Sud-Est*, *Sud-Muntenia* and the eastern part of *Macroregiunea Patru*, the precipitation surplus reached +60-120 mm. The most intense precipitation events (from 30 to 130 mm in one day) occurred during the last days of June, causing significant delays to the harvesting, and providing conditions conducive to the proliferation of fungal infections and other crop diseases which led to decreased grain quality. On the other hand, soil moisture levels increased significantly, which was favourable for the summer crops. Precipitation levels declined in July allowing the harvesting to restart.

The phenological development of all crops is significantly early, by at least 5-10 days. Soil moisture levels are still favourable and are expected to provide good water supply during the yield formation period of maize and sunflower. Crop model simulations indicate exceptionally high accumulation of maize and sunflower biomass. Therefore the yield forecast for these crops was revised upwards to a considerable extent. Potato and sugar beet crops have developed a dense canopy. The calculated biomass and yield potential of these crops also exceed the long-term average.



# Bulgaria

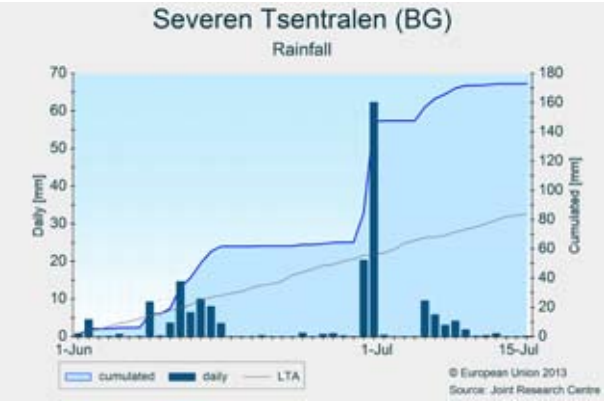
## Good yield outlook for summer crops

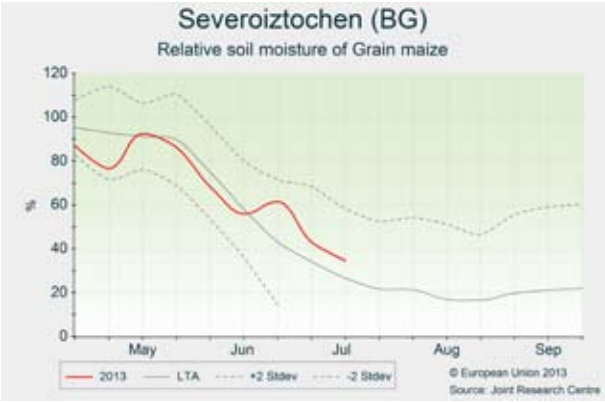
*Abundant rainfall has delayed the harvesting of winter cereals, but kept soil moisture at favourable levels for maize and sunflower crops. Biomass accumulation of summer crops is among the best in years, suggesting high yield potential. The yield forecast for maize and sunflowers was revised upwards accordingly.*

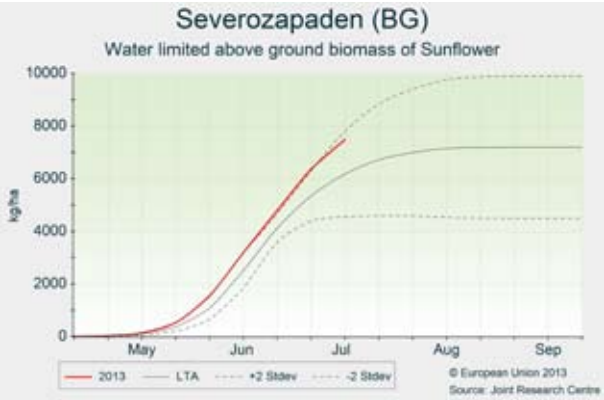
Temperatures fluctuated closely around the average during the first and last 15 days of the period under analysis. Between these two periods, a short heat spell hit the country, with maximum temperatures reaching 33-36°C on the hottest days. This hot period would not have led to any significant yield losses of wheat and barley because these crops were already in the late ripening or maturity stages.

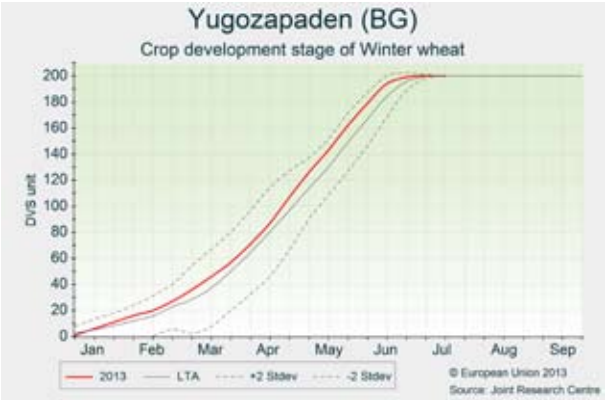
During June, rainfall was frequent and plentiful in most of Bulgaria. Precipitation exceeded the average by 90-160%. The last dekad of the month was unusually wet; especially the last day of June when torrential rains hit the northern regions, thus hampering the harvesting and reducing the grain quality. Locally, the excess precipitation could have caused water logging problems. Below-average rainfall was registered in June in a small limited area along the shore of Black Sea, where only half the normal amount of rainfall was measured. During the first half of July, precipitation was scarce throughout the country.

Harvesting started earlier than usual since the development of winter cereals was strongly advanced due to the above-average thermal conditions of this year. The yield forecasts of winter cereals and rapeseed are just above the average of the past five years. Summer crops benefited from the rainfall in June, which favourably replenished soil moisture. The phenological development of sunflower crops is one week ahead while the other summer crops present normal seasonal development. These near-optimal conditions lead to very high biomass accumulation of maize, sunflower and potato crops indicating the potential for a rich harvest. However, the moist weather conditions of June have increased the risk of crop diseases.



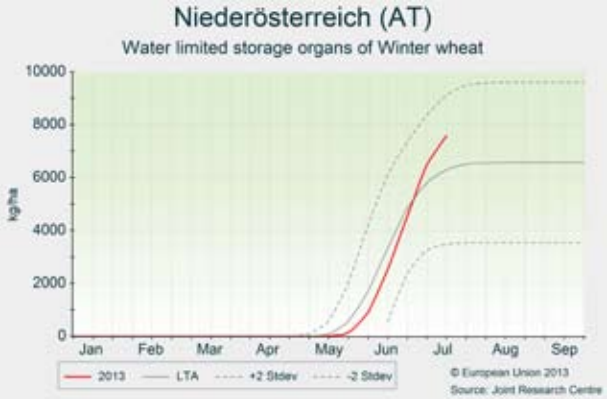
# Austria, the Czech Republic and Slovakia

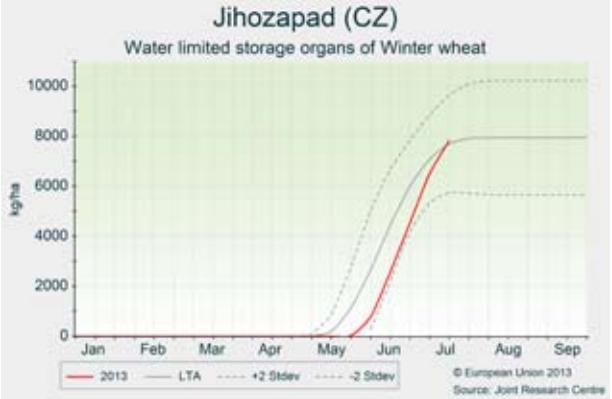
## Normal temperatures and high rainfall. Winter crop yield close to average

*Winter crop yields are revised slightly upwards due to favourable weather and soil moisture conditions of the beginning of July. Summer crops are delayed in Austria and the Czech Republic, but are progressing well in Slovakia.*

Austria and the Czech Republic experienced an exceptionally wet period during the beginning of June, leading to flooding and waterlogging in certain regions. These conditions could be potentially harmful to crop growth, especially for summer crops that were still in an early phase of development during that period. The second dekad of June was significantly warmer than usual, with average daily temperatures up to 4-6°C above normal. These conditions led to a heat wave which persisted for up to six days in some regions. Relative soil moisture remained above average, however, due to the abovementioned abundant rainfall during the first dekad of June. This hot and dry period was followed by a period of abundant rainfall during the 3rd dekad of June, with colder-than-usual conditions in Austria and the Czech Republic and normal temperature conditions in Slovakia. The first half of July was mainly characterised by normal rainfall and temperature conditions, except for the Czech Republic, where conditions were drier than usual.

The excessive soil moisture in Austria and the Czech Republic during the beginning of June contributed to high forecast uncertainty due to the increased vulnerability of crops. Moreover, lower radiation levels during May and June caused below-average biomass accumulation in these countries. These adverse conditions during the previous reporting period were partially compensated by the favourable weather and soil moisture conditions during the first half of July, which contributed to increased biomass accumulation for winter crops during the grain-filling period. The yield forecast of winter crops is therefore revised slightly upwards from that of the previous bulletin. Regarding summer crops, a slight delay in development can still be observed in the Czech Republic as a consequence of low temperatures during the last week of May, and the beginning and last dekad of June. Summer crops are progressing well in Slovakia. Crop yields are therefore forecast to be above the long-term trend for Slovakia, whereas values close to the trend are maintained for Austria and the Czech Republic.



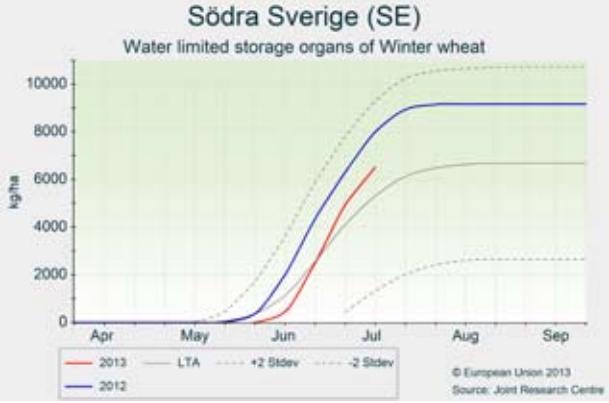

# Denmark and Sweden

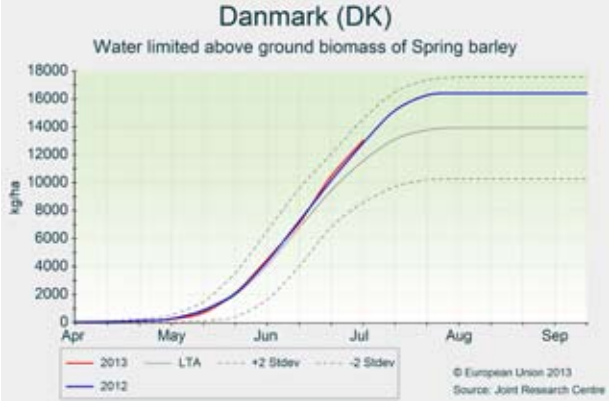
## Good prospects for spring crops

*Sufficient rainfall and near-average temperatures provide favourable growth conditions for winter and spring crops. Yield forecasts were revised slightly upwards for winter and spring crops.*

During the period from 1 June to 15 July, normal thermal conditions prevailed, with cumulated global radiation above the average in Denmark and southern Sweden. The first half of June was rather dry, but above-average rainfall recorded during the second half of June restored the soil water content. In Denmark, a delay in winter crop development is still observed, while in Sweden the earlier delay has been compensated. Good weather conditions were observed from the beginning of July, when grain filling occurred. According to our models, wheat and winter barley show above-average leaf area index, cumulated biomass and simulated storage organs, mainly in southern Sweden, so the yield forecasts are

revised slightly upwards. Spring barley is at the grain-filling stage and simulated crop growth indicators are above average, especially in Sweden. Growth conditions are also favourable for potato and sugar beet, which show above-average cumulated biomass. The yield forecast for these spring crops is slightly above the average of the past five years.




# Finland and the Baltic countries

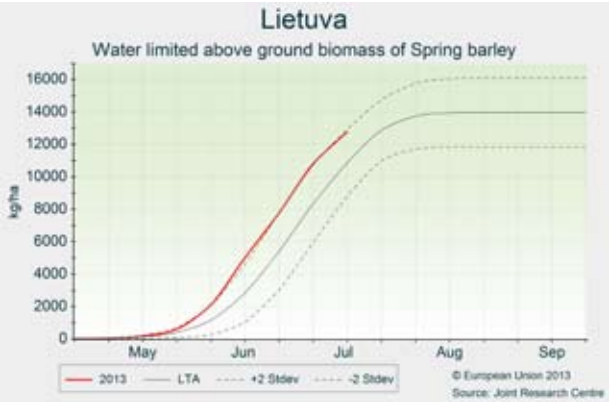
## Yield perspectives remain good but rain needed in the Baltic countries

*Warm weather prevails across the region, stimulating crop growth and development. Crops in Finland benefited from abundant rain, but more rain is needed in the Baltic countries, especially Estonia.*

Warm weather conditions continued to prevail across the region. In all four countries, temperature accumulation during the period of analysis ranks among the highest in our historical records. The cumulated solar radiation during this period was also higher than average. Rainfall patterns, however, were variable. Rainfall in Finland was significantly above average, whereas the Baltic countries experienced below–average rainfall, especially Estonia where cumulated rainfall was more than 50% below normal levels. These conditions led to a negative water balance in the Baltic countries (crops required more water than rainfall supplied), with soil moisture falling below average values for almost all crops. The rainfall that fell during the last days of the period analysed in Latvia and Lithuania improved the situation, but more rain is required, particularly in Estonia.

So far, the conditions described above have been generally good for crop growth and development, especially for spring crops, which advanced rapidly. However, this rapid growth and development could be hampered by water limitation unless soil moisture levels are replenished. The spring cereals, according to our model, are in the grain-filling stage. The winter crops (confined to Lithuania and, to a lesser extent, Latvia) are well advanced in the season, particularly winter rapeseed which has reached maturity earlier than usual. High temperatures have shortened the grain-filling stage of this crop, thus limiting its yield potential. Our yield forecast for rapeseed has not been significantly reduced, however, because the spring varieties can compensate this reduction. Winter wheat growth and development is close to average and with good yield prospects.

Our yield forecast for all crops is based on crop simulations. The yield predictions for spring crops in Estonia and Latvia are slightly lowered as a result of unusually low soil moisture during the flowering and grain-filling stages. However, good yields are still foreseen due to expected rainfall events in coming days.




# Belgium, the Netherlands and Luxembourg

## Improved weather conditions for grain filling and vegetative growth

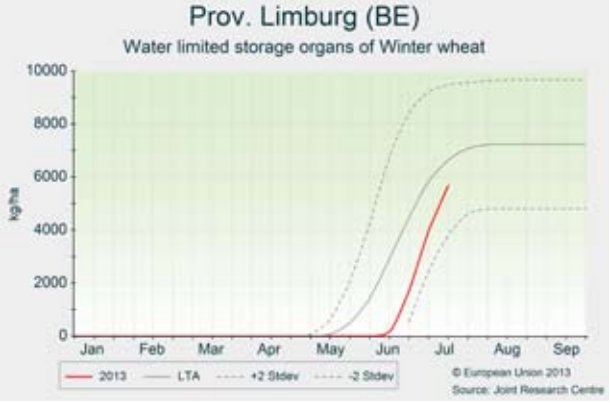
*Predominantly dry weather with near-average sunshine and temperature provided fairly good conditions for crop growth and development. For the main crops, the yield forecast remained close to the values of the previous bulletin or were revised slightly upwards.*

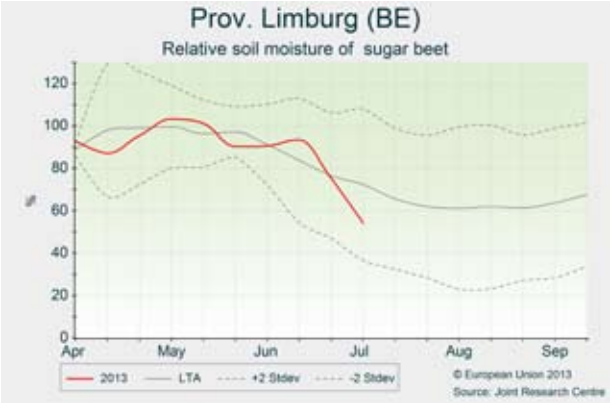
After the excessively cold and rainy conditions of May, the current period under review was mainly characterised by dry weather, with temperatures fluctuating around the average. Rain events were mainly confined to the second half of June and the first few days of July. Rainfall cumulated over the period was well below average. Overall, radiation levels cumulated over the period were close to or just above average.

These weather conditions provided a substantially improved environment for crop growth compared to previous months. Simulations indicate that the grain filling of winter cereals and spring barley has been taking place at a rapid pace, approaching normal levels for this time of the year, yet phenological development has not accelerated substantially, indicating that there is still room for further grain accumulation. The growth and development of root crops is now also proceeding at normal levels.

These near-average developments were to a large extent already included in the forecast of the previous Bulletin. Therefore, most of the revised figures show rather minor differences.

Soil moisture content in well-drained non-irrigated areas is rapidly depleting. This is unlikely to seriously affect winter cereals and spring barley crops which are near the end of their growth cycle. However, more rain is needed to sustain yields of maize and other spring and summer crops. As a dry period is forecast, the yield potential of these crops remains vulnerable.



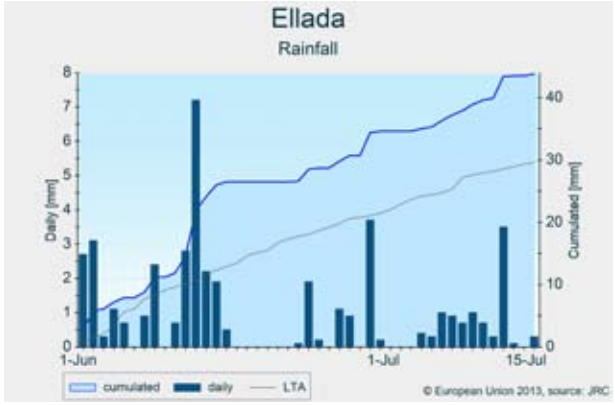



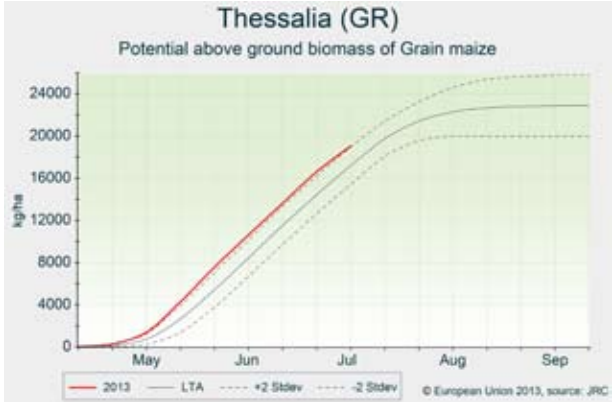

# Greece and Cyprus

## Positive outlook for spring crops

*Meteorological conditions in Greece indicate a positive outlook for spring crops. Yields are confirmed or revised slightly higher. Harvesting of winter cereals completed in both Greece and Cyprus.*

Greece experienced a 10-day period (between 16 and 26 of June) of high temperatures and very little precipitation, which created good conditions for completion of the harvesting of winter cereals. However, there are concerns that the rainfall



during the previous period (first dekad of June) may have affected the quality of the harvested winter cereals. Since 26 June, temperatures fluctuated around the long-term average and the country received considerable amounts of well-distributed precipitation.

Overall, these weather conditions have been favourable for spring crops. Grain maize passed the flowering phase in most regions and is currently at the grain-filling stage. The potential aboveground biomass is also simulated to be above the long-term average for the other spring crops (i.e. potato, sunflower and sugar beet). As a result, the values of the previous bulletin are confirmed or revised slightly upwards.

In Cyprus, temperatures were around the long-term average during the observation period, whereas no precipitation was recorded. Here, the harvesting of winter cereals also completed. The rather negative yield forecasts of the last bulletin are maintained.

## Croatia

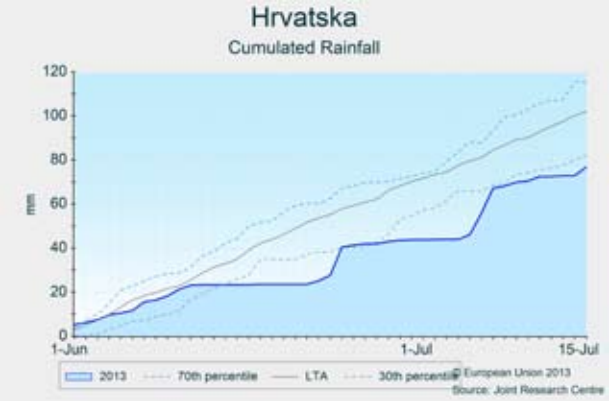
### The period of persistent rainfall ended on time for normal harvest

*The period of abundant rainfall in Croatia ended just in time for the harvesting of winter crops. Spring cereals are in the late ripening stage. Soil moisture reserves are decreasing rapidly and rain is required for summer crops.*

The period analysed started with below-average temperatures followed by a heat wave in the second half of June that lasted almost one week. Rainfall was lower than usual.

The hot and dry weather accelerated the ripening and grain drying of the winter cereals and winter rapeseed. Harvesting started on time and under good weather conditions. Spring cereals are close to maturity with good yield prospects. The heat wave of the second half of June did not significantly affect crop growth because there was still enough soil moisture. The period of low precipitation that followed the heat wave was favourable for the ripening of the cereals and harvesting, but soil moisture for summer crops was further depleted. Summer crops are now facing soil-water deficits that could negatively affect yields. Additional rain during the coming days could still prevent any negative effects. According to the weather forecast, however, no rain is expected. The risk is highest for grain maize that is close to the flowering stage, the stage that is most sensitive to water deficits.

Our yield forecast for all crops is based on crop simulations. The yield predictions for winter crops are close to the five-year average and similar to those of last year. The current yield forecast for summer crops is higher than the five-year average and much higher than that of last year, when severe summer drought led to significantly reduced yields.





# 3.2 Black Sea area

## Ukraine

### Warm temperatures have accelerated the crop cycle

*Warm temperatures speeded up the crop cycle, particularly in the southern and eastern regions of the country. These conditions, which are particularly affecting the eastern regions, are forecasted to slightly depress the overall yields of winter cereals and spring barley. Conditions for grain maize are optimal, particularly in the south.*

The warm temperatures observed during spring have persisted. Since the beginning of June, average temperatures are at least 2°C above average in the eastern half of Ukraine and 1°C above average in the western half.

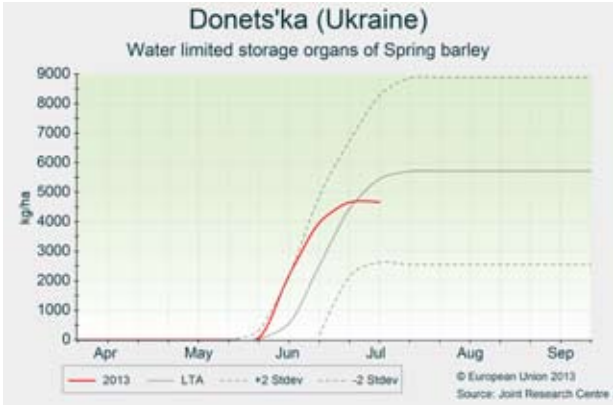
In the western regions, the slightly above-average temperatures and abundant rainfall since the beginning of the year contributed to optimal conditions for almost all crops.

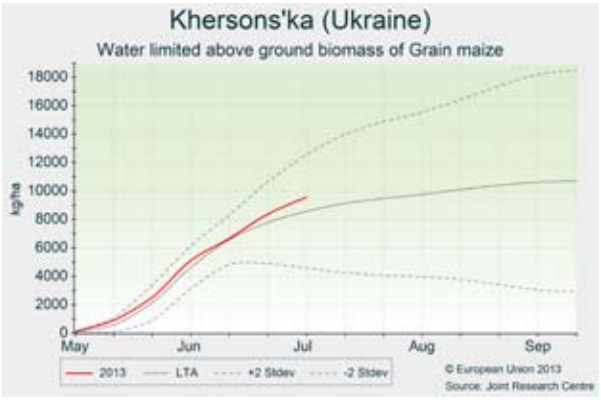
In the south, after being affected by dry conditions in May, the

*Krym* and *Khersons'ka* regions received substantial rainfall. Rainfall accumulated since the beginning of June is at least 40 mm above average in *Odes'ka*, *Krym*, *Mykolayivs'ka* and *Khersons'ka*.

In the eastern half of the country, remote sensing and crop model indicators depict a decrease in yields which is attributed to the shortened crop cycle caused by warm temperatures. Therefore, yields forecasts of barley and wheat are maintained slightly lower than the five-year average. The dry conditions observed earlier in the season in *Krym* and *Kherson'ka* also contribute to the decrease in yields.

Conditions for grain maize are optimal since temperatures are warmer than normal and substantial rainfall was observed at the end of June and beginning of July. Forecasts are thus revised upwards and are now higher than the five-year average.



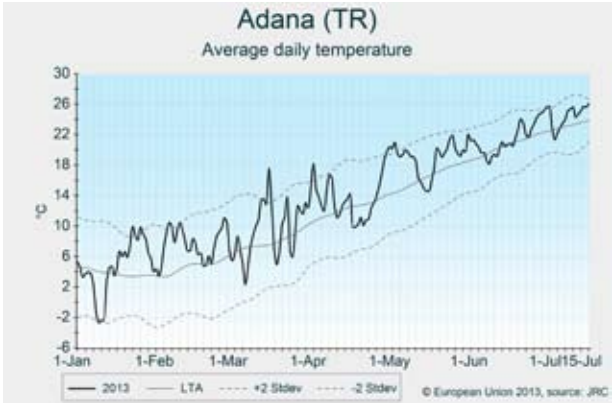



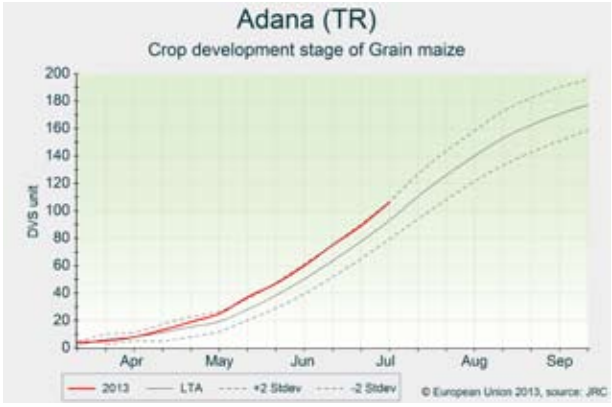

# Turkey

## Above-average crop yields expected

*Favourable weather conditions indicate a good yield for grain maize. Winter wheat and winter barley have completed their growth cycle with an above-average yield forecast.*

The time window considered in the present analysis (up to July 15) registers continued favourable temperature development, above-average cumulated global radiation and well-distributed rainfall events in the barley- and wheat-producing areas of the country (i.e. central Anatolian regions comprising of Konya, Ankara and Kirikkale) where winter barley and winter wheat have now completed their growth cycles. The final yield forecast is greater than the 5-year-average values for both crops. Grain maize is in its flowering stage. The modelled crop development stage and the leaf area index are well above long-term average values. The prevailing meteorological conditions in the main production areas (Adana, Hatay, Bati Karadeniz) also continued to be favourable. Therefore the forecast for maize was revised upwards, to slightly above the 5-year-average value.



# 3.3 European Russia and Belarus

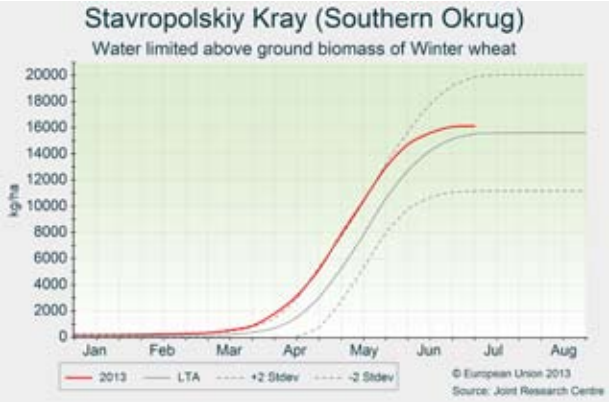
## European Russia

### Ample winter wheat production

*Above-average winter wheat yields are expected, despite the high temperatures and unevenly distributed rainfall in southern regions. The southern part of the Volga Federal District is affected by drought. The growth and development of spring and summer crops are satisfactory, but would benefit from more rain.*

From 1 June to 15 July, temperatures persistently exceeded the average in a wide strip between the White Sea and the Caspian Sea. A less obvious but perceptible positive thermal anomaly was also observed in eastern regions of European Russia. Rainfall cumulated over this period was plentiful in the western half of Russia, where it typically reached 70-120 mm; with even higher values in extended regions between the Black Sea and the Caspian Sea. By contrast, low precipitation levels in *Saratovskaya*, *Orenburgskaya*, *Samarskaya*, and *Ulyanovskaya Oblasts* in the *Volga District* led to soil drought conditions. The rains in the Central and Southern Federal Districts helped to ease the previous water deficiency, thus leading to a partial recovery of the maize crops in these areas.

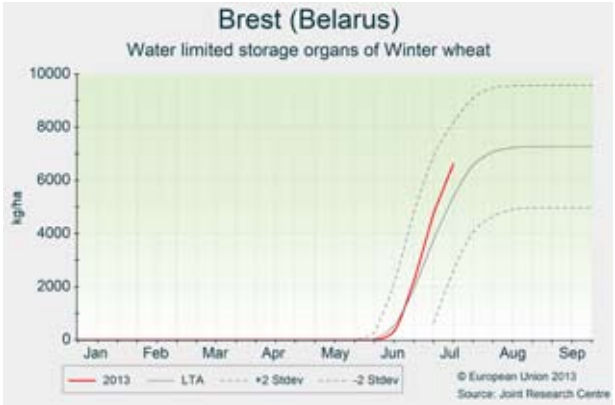
Phenological development of all crops is significantly advanced due to the above-average thermal conditions experienced since the beginning of the season. The harvesting of winter cereals started two-three weeks earlier than usual due to abnormally warm weather conditions in the *Southern District*. Abundant rainfall in July hampered the harvesting in several areas but did not cause significant damage. Biomass accumulation of winter wheat is above average in the main producing regions. Therefore, good yields are expected. The yield potential of maize is also above average in the *Southern Federal District*, with the exception of some northern territories. However, despite promising high biomass accumulation, an analysis of satellite images and model simulation results indicates that above-average yields of spring cereals and maize in the *Central* and *Volga Okrug*, are at risk due to low soil moisture content and the shortened flowering and grain-filling periods.

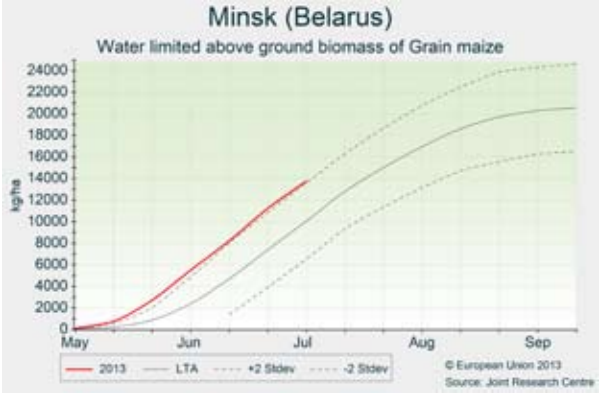




## Belarus

### Crops are benefiting from warm temperatures

*The average temperatures remained higher than usual since the beginning of June, contributing to rapid crop growth. Conditions are optimal and yields are forecasted to be higher than average.*



Average temperatures remained 2.5°C higher than usual since 1 June in most parts of Belarus, with just a few days in June that had below-average temperatures. The third dekad of June was particularly warm with maximum temperatures reaching 30°C. Crop cycles for spring barley and grain maize are ahead by one dekad. Thanks to the latest rainfall events, cumulated rainfall since 1 June has been close to the average in most regions aside from Gomel and Mogilev where they were below average. However, the previous rainfalls since the beginning of spring are still ensuring optimal conditions in these regions.

Crop model indicators as well as remote sensing indicators depict a positive scenario for all crops. Therefore, above-average yield forecasts for winter and spring crops are maintained.

## 3.4 Maghreb countries

### Morocco, Tunisia and Algeria Seasonal summary 2012-2013

*A very good season in Morocco and parts of Algeria. Tunisia has experienced less beneficial weather and yields are expected to suffer.*

Morocco has experienced very beneficial weather for crop development and growth over the entire growing season. Temperatures have been mild to warm throughout, and most agricultural areas have received abundant rainfall. Remote sensing indicators have consistently shown canopy vegetation to be in above-average condition. A very good harvest is expected. Tunisia, on the other hand, has received below-average rainfall throughout the growing season, and yields are expected to suffer as a result of this. However, this shortfall in rain has not been experienced by all parts of the country equally. Parts of northern Tunisia, where wheat is predominantly grown, have continued to receive some rain, and soft wheat yields are not expected to be affected as much as durum wheat and barley yields.

Algeria, lying between Morocco and Tunisia, has experienced both extremes. Western Algeria has experienced mild temperatures and abundant rainfall, has shown above average canopy vegetation conditions, and is expected to have good cereal yields. Eastern Algeria, on the other hand, has received below-average rainfall, and expected yields are not as high as in the west. On balance, above-average yields are expected at the national level, but not as high as those in Morocco.

Yield predictions for all three countries remain as in the last bulletin.




# 4. Crop yield forecasts and yield maps

| Country | TOTAL WHEAT (t/ha) | | | | | SOFT WHEAT (t/ha) | | | | | DURUM WHEAT (t/ha) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2012 | 2013 | Avg 5yrs | %13/12 | %13/5yrs | 2012 | 2013 | Avg 5yrs | %13/12 | %13/5yrs | 2012 | 2013 | Avg 5yrs | %13/12 | %13/5yrs |
| EU28 | 5.19 | **5.45** | 5.37 | +5.0 | +1.5 | 5.42 | **5.69** | 5.62 | +4.9 | +1.2 | 3.13 | **3.33** | 3.21 | +6.2 | +3.8 |
| AT | 4.14 | **5.30** | 5.13 | +28.1 | +3.4 | 4.19 | **5.34** | 5.17 | +27.4 | +3.3 | 3.07 | **4.43** | 4.34 | +44.4 | +2.0 |
| BE | 8.27 | **8.70** | 8.74 | +5.2 | -0.5 | 8.27 | **8.70** | 8.74 | +5.2 | -0.5 | - | **-** | - | - | - |
| BG | 3.76 | **3.85** | 3.71 | +2.4 | +3.9 | 3.78 | **3.85** | 3.70 | +2.0 | +4.0 | 2.68 | **3.70** | 3.85 | +37.7 | -4.1 |
| CY | 2.24 | **2.11** | 2.01 | -6.0 | +5.1 | - | **-** | - | - | - | 2.24 | **2.11** | 2.01 | -6.0 | +5.1 |
| CZ | 4.32 | **5.05** | 5.22 | +17.0 | -3.2 | 4.32 | **5.05** | 5.22 | +17.0 | -3.2 | - | **-** | - | - | - |
| DE | 7.33 | **7.69** | 7.49 | +4.9 | +2.6 | 7.34 | **7.70** | 7.50 | +4.9 | +2.6 | 4.91 | **5.28** | 5.34 | +7.6 | -1.2 |
| DK | 7.37 | **7.21** | 7.27 | -2.2 | -0.9 | 7.37 | **7.21** | 7.27 | -2.2 | -0.9 | - | **-** | - | - | - |
| EE | 3.90 | **3.29** | 3.13 | -15.7 | +5.1 | 3.90 | **3.29** | 3.13 | -15.7 | +5.1 | - | **-** | - | - | - |
| ES | 2.35 | **3.55** | 2.94 | +51.4 | +21.1 | 2.64 | **3.75** | 3.19 | +41.8 | +17.5 | 1.08 | **2.68** | 2.08 | +148.4 | +29.0 |
| FI | 3.93 | **3.85** | 3.77 | -2.0 | +2.1 | 3.93 | **3.85** | 3.77 | -2.0 | +2.1 | - | **-** | - | - | - |
| FR | 7.15 | **7.02** | 7.02 | -1.8 | +0.0 | 7.30 | **7.15** | 7.19 | -2.1 | -0.5 | 5.45 | **5.28** | 5.06 | -3.0 | +4.3 |
| GR | 2.42 | **2.64** | 2.74 | +8.9 | -3.9 | 2.83 | **2.71** | 2.99 | -4.1 | -9.4 | 2.31 | **2.62** | 2.66 | +13.3 | -1.8 |
| HR | 5.35 | **4.93** | 4.86 | -7.8 | +1.5 | 5.35 | **4.93** | 4.86 | -7.8 | +1.5 | - | **-** | - | - | - |
| HU | 3.73 | **4.54** | 4.10 | +21.5 | +10.8 | 3.73 | **4.54** | 4.10 | +21.7 | +10.9 | 3.70 | **4.07** | 3.80 | +9.7 | +7.0 |
| IE | 8.53 | **8.50** | 8.83 | -0.4 | -3.8 | 8.53 | **8.50** | 8.83 | -0.4 | -3.8 | - | **-** | - | - | - |
| IT | 4.13 | **3.86** | 3.83 | -6.6 | +0.8 | 5.89 | **5.28** | 5.39 | -10.4 | -2.0 | 3.32 | **3.21** | 3.14 | -3.4 | +2.0 |
| LT | 4.78 | **4.04** | 3.99 | -15.5 | +1.3 | 4.78 | **4.04** | 3.99 | -15.5 | +1.3 | - | **-** | - | - | - |
| LU | 5.87 | **6.19** | 6.12 | +5.6 | +1.2 | 5.87 | **6.19** | 6.12 | +5.6 | +1.2 | - | **-** | - | - | - |
| LV | 4.37 | **3.79** | 3.64 | -13.2 | +4.1 | 4.37 | **3.79** | 3.64 | -13.2 | +4.1 | - | **-** | - | - | - |
| MT | - | **-** | - | - | - | - | **-** | - | - | - | - | **-** | - | - | - |
| NL | 8.52 | **8.78** | 8.65 | +3.0 | +1.5 | 8.52 | **8.78** | 8.65 | +3.0 | +1.5 | - | **-** | - | - | - |
| PL | 4.14 | **4.28** | 4.18 | +3.3 | +2.4 | 4.14 | **4.28** | 4.18 | +3.3 | +2.4 | - | **-** | - | - | - |
| PT | 1.19 | **2.20** | 1.55 | +85.2 | +42.3 | 1.19 | **2.20** | 1.55 | +85.2 | +42.3 | - | **-** | - | - | - |
| RO | 2.61 | **3.31** | 2.96 | +26.9 | +11.9 | 2.61 | **3.31** | 2.96 | +26.9 | +11.9 | - | **-** | - | - | - |
| SE | 6.26 | **5.83** | 5.84 | -6.9 | -0.3 | 6.26 | **5.83** | 5.84 | -6.9 | -0.3 | - | **-** | - | - | - |
| SI | 5.43 | **4.63** | 4.78 | -14.9 | -3.2 | 5.43 | **4.63** | 4.78 | -14.9 | -3.2 | - | **-** | - | - | - |
| SK | 3.30 | **4.12** | 4.03 | +24.8 | +2.2 | 3.30 | **4.12** | 4.03 | +24.8 | +2.2 | - | **-** | - | - | - |
| UK | 6.66 | **7.90** | 7.66 | +18.7 | +3.2 | 6.66 | **7.90** | 7.66 | +18.7 | +3.2 | - | **-** | - | - | - |

| Country | TOTAL BARLEY (t/ha) | | | | | SPRING BARLEY (t/ha) | | | | | WINTER BARLEY (t/ha) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2012 | 2013 | Avg 5yrs | %13/12 | %13/5yrs | 2012 | 2013 | Avg 5yrs | %13/12 | %13/5yrs | 2012 | 2013 | Avg 5yrs | %13/12 | %13/5yrs |
| EU28 | 4.38 | **4.78** | 4.39 | +9.1 | +8.9 | 3.91 | **4.33** | 3.83 | +10.9 | +13.3 | 5.21 | **5.48** | 5.25 | +5.2 | +4.5 |
| AT | 4.40 | **4.98** | 4.86 | +13.1 | +2.4 | 3.44 | **4.28** | 4.13 | +24.4 | +3.7 | 5.29 | **5.52** | 5.61 | +4.4 | -1.5 |
| BE | 7.95 | **8.40** | 8.43 | +5.5 | -0.4 | - | **-** | - | - | - | 7.95 | **8.40** | 8.43 | +5.5 | -0.4 |
| BG | 3.47 | **3.81** | 3.66 | +9.8 | +4.2 | - | **-** | - | - | - | 3.47 | **3.81** | 3.66 | +9.8 | +4.2 |
| CY | 1.71 | **1.41** | 1.44 | -17.5 | -2.2 | - | **-** | - | - | - | 1.71 | **1.41** | 1.44 | -17.5 | -2.2 |
| CZ | 4.23 | **4.47** | 4.39 | +5.7 | +1.9 | 4.31 | **4.46** | 4.33 | +3.5 | +3.1 | 3.98 | **4.49** | 4.54 | +12.7 | -1.1 |
| DE | 6.21 | **6.39** | 6.11 | +3.0 | +4.6 | 5.64 | **5.26** | 5.09 | -6.6 | +3.5 | 6.49 | **6.72** | 6.48 | +3.5 | +3.8 |
| DK | 5.61 | **5.44** | 5.32 | -3.1 | +2.2 | 5.49 | **5.31** | 5.17 | -3.2 | +2.8 | 6.37 | **5.90** | 5.95 | -7.5 | -0.8 |
| EE | 3.13 | **2.88** | 2.65 | -7.8 | +8.8 | 3.13 | **2.88** | 2.65 | -7.8 | +8.8 | - | **-** | - | - | - |
| ES | 2.23 | **3.92** | 2.74 | +75.4 | +43.2 | 2.27 | **3.94** | 2.80 | +73.2 | +40.7 | 2.00 | **3.80** | 2.40 | +89.9 | +58.3 |
| FI | 3.48 | **3.50** | 3.41 | +0.3 | +2.6 | 3.48 | **3.50** | 3.41 | +0.3 | +2.6 | - | **-** | - | - | - |
| FR | 6.74 | **6.61** | 6.48 | -1.9 | +2.0 | 6.64 | **6.53** | 6.23 | -1.6 | +4.8 | 6.81 | **6.64** | 6.59 | -2.4 | +0.7 |
| GR | 2.48 | **2.45** | 2.45 | -1.3 | +0.0 | - | **-** | - | - | - | 2.48 | **2.45** | 2.45 | -1.3 | +0.0 |
| HR | 4.25 | **4.29** | 4.03 | +1.0 | +6.6 | - | **-** | - | - | - | 4.25 | **4.29** | 4.03 | +1.0 | +6.6 |
| HU | 3.61 | **4.04** | 3.71 | +11.9 | +8.7 | 3.21 | **3.33** | 3.31 | +3.5 | +0.6 | 3.83 | **4.39** | 3.96 | +14.5 | +10.9 |
| IE | 6.62 | **6.93** | 6.94 | +4.7 | -0.1 | 6.22 | **6.67** | 6.64 | +7.2 | +0.4 | 8,00 | **8.45** | 8.52 | +5.6 | -0.9 |
| IT | 3.79 | **3.58** | 3.59 | -5.4 | -0.1 | - | **-** | - | - | - | 3.79 | **3.58** | 3.59 | -5.4 | -0.1 |
| LT | 3.38 | **3.03** | 2.98 | -10.5 | +1.7 | 3.38 | **3.03** | 2.98 | -10.5 | +1.7 | - | **-** | - | - | - |
| LU | - | **-** | - | - | - | - | **-** | - | - | - | - | **-** | - | - | - |
| LV | 2.83 | **2.52** | 2.56 | -11.1 | -1.5 | 2.83 | **2.52** | 2.56 | -11.1 | -1.5 | - | **-** | - | - | - |
| MT | - | **-** | - | - | - | - | **-** | - | - | - | - | **-** | - | - | - |
| NL | 5.70 | **5.98** | 6.02 | +5.0 | -0.6 | 5.70 | **5.98** | 6.02 | +5.0 | -0.6 | - | **-** | - | - | - |
| PL | 3.60 | **3.47** | 3.30 | -3.5 | +5.3 | 3.56 | **3.33** | 3.15 | -6.7 | +5.6 | 3.85 | **4.05** | 3.98 | +5.3 | +1.8 |
| PT | 1.27 | **2.10** | 1.63 | +66.0 | +29.0 | - | **-** | - | - | - | 1.27 | **2.10** | 1.63 | +66.0 | +29.0 |
| RO | 2.36 | **2.92** | 2.72 | +23.7 | +7.1 | 1.84 | **2.04** | 2.01 | +11.0 | +1.5 | 2.64 | **3.38** | 3.13 | +28.0 | +7.9 |
| SE | 4.6 | **4.60** | 4.36 | +0.1 | +5.6 | 4.55 | **4.58** | 4.32 | +0.6 | +6.1 | 6.63 | **5.41** | 5.41 | -18.4 | +0.1 |
| SI | 4.72 | **4.33** | 4.21 | -8.2 | +2.9 | - | **-** | - | - | - | 4.72 | **4.33** | 4.21 | -8.2 | +2.9 |
| SK | 3.18 | **3.52** | 3.49 | +10.6 | +0.8 | 3.19 | **3.52** | 3.48 | +10.5 | +1.3 | 3.12 | **3.47** | 3.59 | +11.1 | -3.4 |
| UK | 5.52 | **5.69** | 5.73 | +3.1 | -0.7 | 4.97 | **5.44** | 5.31 | +9.5 | +2.5 | 6.38 | **6.40** | 6.40 | +0.4 | +0.0 |

| Country | GRAIN MAIZE (t/ha) | | | | | RYE (t/ha) | | | | | TRITICALE (t/ha) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2012 | 2013 | Avg 5yrs | %13/12 | %13/5yrs | 2012 | 2013 | Avg 5yrs | %13/12 | %13/5yrs | 2012 | 2013 | Avg 5yrs | %13/12 | %13/5yrs |
| EU28 | 6.08 | **7.22** | 6.99 | +18.9 | +3.3 | 3.72 | **3.73** | 3.34 | +0.1 | +11.7 | 4.18 | **4.15** | 4.06 | -0.6 | +2.3 |
| AT | 10.70 | **10.90** | 10.68 | +1.9 | +2.1 | 4.48 | **3.98** | 4.07 | -11.1 | -2.3 | 5.04 | **4.74** | 5.06 | -5.8 | -6.3 |
| BE | 10.24 | **11.55** | 11.63 | +12.8 | -0.7 | - | - | - | - | - | - | - | - | - | - |
| BG | 3.68 | **5.59** | 4.77 | +51.9 | +17.1 | - | - | - | - | - | 2.45 | **3.20** | 3.11 | +30.5 | +3.0 |
| CY | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| CZ | 7.78 | **8.10** | 7.82 | +4.1 | +3.6 | 4.78 | **3.92** | 4.50 | -17.9 | -12.8 | 4.31 | **4.32** | 4.26 | +0.4 | +1.6 |
| DE | 10.48 | **9.38** | 9.94 | -10.5 | -5.7 | 5.47 | **5.63** | 4.99 | +2.8 | +12.8 | 6.18 | **6.16** | 5.82 | -0.3 | +6.0 |
| DK | 5.82 | - | 5.28 | - | - | 5.95 | **5.50** | 5.30 | -7.6 | +3.9 | 5.21 | **5.22** | 5.13 | +0.2 | +1.7 |
| EE | - | - | - | - | - | 3.39 | **2.94** | 2.65 | -13.2 | +11.2 | - | - | - | - | - |
| ES | 10.94 | **11.06** | 10.58 | +1.0 | +4.5 | 1.60 | **2.21** | 1.98 | +38.0 | +11.9 | 1.76 | **2.56** | 2.26 | +45.4 | +13.6 |
| FI | - | - | - | - | - | 3.18 | **2.98** | 2.76 | -6.3 | +7.7 | - | - | - | - | - |
| FR | 9.08 | **9.04** | 9.22 | -0.5 | -2.0 | 5.08 | **4.82** | 4.93 | -5.2 | -2.3 | 5.53 | **5.24** | 5.40 | -5.4 | -3.0 |
| GR | 10.61 | **10.73** | 10.79 | +1.1 | -0.6 | 2.11 | **2.34** | 2.08 | +11.0 | +12.5 | - | - | - | - | - |
| HR | 4.34 | **6.75** | 6.46 | +55.5 | +4.4 | - | - | - | - | - | 4.18 | **4.03** | 3.74 | -3.6 | +7.9 |
| HU | 3.98 | **6.94** | 6.17 | +74.2 | +12.5 | 2.24 | **2.43** | 2.20 | +8.6 | +10.7 | 3.11 | **3.97** | 3.27 | +27.7 | +21.6 |
| IE | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| IT | 8.36 | **8.92** | 9.15 | +6.7 | -2.6 | - | - | - | - | - | - | - | - | - | - |
| LT | 6.11 | **8.04** | 5.77 | +31.7 | +39.5 | 2.80 | **2.46** | 2.40 | -12.2 | +2.6 | 3.65 | **2.99** | 2.97 | -18.2 | +0.7 |
| LU | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| LV | - | - | - | - | - | 3.42 | **3.23** | 3.03 | -5.7 | +6.4 | 3.70 | **2.74** | 2.68 | -25.8 | +2.5 |
| MT | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| NL | 11.67 | **11.40** | 12.00 | -2.3 | -5.0 | - | - | - | - | - | - | - | - | - | - |
| PL | 7.35 | **7.29** | 6.51 | -0.7 | +12.0 | 2.77 | **2.60** | 2.53 | -6.3 | +2.7 | 3.38 | **3.50** | 3.41 | +3.7 | +2.6 |
| PT | 8.32 | **7.86** | 7.27 | -5.4 | +8.1 | 0.93 | **0.99** | 0.93 | +6.2 | +7.0 | 1.15 | **1.69** | 1.38 | +47.3 | +22.6 |
| RO | 2.16 | **4.17** | 3.53 | +92.5 | +17.9 | - | - | - | - | - | 2.93 | **3.13** | 3.02 | +6.9 | +3.5 |
| SE | - | - | - | - | - | 6.35 | **5.86** | 5.82 | -7.8 | +0.6 | 5.92 | **4.99** | 5.03 | -15.7 | -0.9 |
| SI | 7.01 | **7.81** | 7.88 | +11.4 | -0.9 | - | - | - | - | - | - | - | - | - | - |
| SK | 5.51 | **6.57** | 6.70 | +19.2 | -1.9 | 3.15 | **2.80** | 2.90 | -11.0 | -3.4 | - | - | - | - | - |
| UK | - | - | - | - | - | - | - | - | - | - | 3.50 | **4.06** | 4.02 | +16.0 | +1.1 |

| Country | RAPE AND TURNIP RAPE (t/ha) | | | | | POTATO (t/ha) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 2012 | 2013 | Avg 5yrs | %13/12 | %13/5yrs | 2012 | 2013 | Avg 5yrs | %13/12 | %13/5yrs |
| EU28 | 3.11 | **3.08** | 3.04 | -1.1 | +1.2 | 30.61 | **31.65** | 30.60 | +3.4 | +3.5 |
| AT | 2.67 | **3.10** | 3.06 | +16.1 | +1.1 | 30.55 | **32.75** | 32.51 | +7.2 | +0.7 |
| BE | 3.93 | **4.02** | 4.09 | +2.2 | -1.9 | 45.42 | **46.04** | 45.73 | +1.4 | +0.7 |
| BG | 2.01 | **2.65** | 2.33 | +31.6 | +13.8 | 10.15 | **18.03** | 15.10 | +77.6 | +19.4 |
| CY | - | - | - | - | - | - | - | - | - | - |
| CZ | 2.76 | **3.19** | 2.90 | +15.5 | +10.0 | 27.98 | **26.77** | 27.01 | -4.3 | -0.9 |
| DE | 3.69 | **3.80** | 3.71 | +2.9 | +2.4 | 44.76 | **42.32** | 43.69 | -5.4 | -3.1 |
| DK | 3.75 | **3.55** | 3.64 | -5.5 | -2.5 | 42.13 | **41.27** | 39.98 | -2.0 | +3.2 |
| EE | 1.89 | **1.77** | 1.59 | -6.2 | +11.8 | - | - | - | - | - |
| ES | 1.80 | **2.11** | 1.81 | +17.2 | +16.7 | 30.06 | **31.22** | 29.71 | +3.8 | +5.1 |
| FI | 1.28 | **1.24** | 1.36 | -2.6 | -8.4 | 23.65 | **27.33** | 26.37 | +15.5 | +3.6 |
| FR | 3.41 | **3.28** | 3.45 | -3.9 | -4.9 | 40.87 | **41.82** | 43.43 | +2.3 | -3.7 |
| GR | - | - | - | - | - | 25.47 | **26.78** | 25.6 | +5.2 | +4.6 |
| HR | 2.67 | **2.64** | 2.62 | -1.1 | +0.6 | 14.73 | **18.40** | 16.56 | +24.9 | +11.1 |
| HU | 2.46 | **2.69** | 2.33 | +9.5 | +15.7 | 23.13 | **27.94** | 25.46 | +20.8 | +9.7 |
| IE | - | - | - | - | - | - | - | - | - | - |
| IT | 2.38 | **2.32** | 2.29 | -2.7 | +0.9 | 25.43 | **25.23** | 24.90 | -0.8 | +1.3 |
| LT | 2.43 | **2.14** | 2.05 | -11.8 | +4.6 | 17.11 | **16.43** | 14.95 | -4,0 | +9.9 |
| LU | - | - | - | - | - | - | - | - | - | - |
| LV | 2.64 | **2.42** | 2.24 | -8.5 | +7.8 | 19.57 | **18.45** | 17.61 | -5.7 | +4.8 |
| MT | - | - | - | - | - | - | - | - | - | - |
| NL | - | - | - | - | - | 45.18 | **45.25** | 45.43 | +0.1 | -0.4 |
| PL | 2.61 | **2.67** | 2.60 | +2.2 | +2.6 | 24.24 | **22.07** | 21.36 | -9.0 | +3.3 |
| PT | - | - | - | - | - | 14.71 | **15.92** | 15.33 | +8.2 | +3.8 |
| RO | 1.60 | **1.78** | 1.70 | +11.0 | +4.6 | 10.76 | **16.30** | 14.09 | +51.5 | +15.7 |
| SE | 2.94 | **2.80** | 2.80 | -4.9 | -0.3 | 32.55 | **31.74** | 31.58 | -2.5 | +0.5 |
| SI | - | - | - | - | - | - | - | - | - | - |
| SK | 1.99 | **2.34** | 2.24 | +17.7 | +4.7 | - | - | - | - | - |
| UK | 3.40 | **3.32** | 3.47 | -2.1 | -4.3 | 35.0 | **40.74** | 41.45 | +16.4 | -1.7 |

| Country | SUGAR BEETS (t/ha) | | | | | SUNFLOWER (t/ha) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 2012 | 2013 | Avg 5yrs | %13/12 | %13/5yrs | 2012 | 2013 | Avg 5yrs | %13/12 | %13/5yrs |
| EU28 | 69.72 | **70.14** | 69.71 | +0.6 | +0.6 | 1.68 | **1.92** | 1.86 | +14.5 | +3.4 |
| AT | 63.22 | **71.63** | 69.88 | +13.3 | +2.5 | 2.27 | **2.73** | 2.69 | +20.0 | +1.5 |
| BE | 73.68 | **77.57** | 78.39 | +5.3 | -1.0 | - | **-** | - | - | - |
| BG | - | **-** | - | - | - | 1.78 | **2.12** | 1.91 | +19.6 | +11.4 |
| CY | - | **-** | - | - | - | - | **-** | - | - | - |
| CZ | 63.26 | **63.19** | 59.91 | -0.1 | +5.5 | 2.31 | **2.39** | 2.35 | +3.2 | +1.4 |
| DE | 68.86 | **65.85** | 67.47 | -4.4 | -2.4 | 2.38 | **2.29** | 2.13 | -3.7 | +7.8 |
| DK | 64.92 | **62.20** | 60.52 | -4.2 | +2.8 | - | **-** | - | - | - |
| EE | - | **-** | - | - | - | - | **-** | - | - | - |
| ES | 88.71 | **93.41** | 85.60 | +5.3 | +9.1 | 0.81 | **1.09** | 1.10 | +34.5 | -1.0 |
| FI | 34.67 | **40.90** | 38.38 | +18.0 | +6.6 | - | **-** | - | - | - |
| FR | 87.52 | **91.27** | 89.16 | +4.3 | +2.4 | 2.32 | **2.39** | 2.42 | +3.3 | -1.2 |
| GR | 58.98 | **61.96** | 64.73 | +5.0 | -4.3 | 2.59 | **2.52** | 1.91 | -2.5 | +32.1 |
| HR | 39.11 | **54.17** | 51.14 | +38.5 | +5.9 | 2.68 | **3.24** | 2.70 | +20.9 | +19.8 |
| HU | 43.86 | **58.80** | 54.52 | +34.1 | +7.9 | 2.15 | **2.46** | 2.29 | +14.6 | +7.3 |
| IE | - | **-** | - | - | - | - | **-** | - | - | - |
| IT | 54.92 | **53.43** | 56.14 | -2.7 | -4.8 | 1.66 | **2.22** | 2.13 | +33.4 | +4.1 |
| LT | 52.24 | **47.14** | 46.49 | -9.8 | +1.4 | - | **-** | - | - | - |
| LU | - | **-** | **-** | - | - | - | **-** | - | - | - |
| LV | - | **-** | - | - | - | - | **-** | - | - | - |
| MT | - | **-** | - | - | - | - | **-** | - | - | - |
| NL | 78.86 | **79.74** | 76.95 | +1.1 | +3.6 | **-** | **-** | **-** | - | - |
| PL | 58.25 | **54.66** | 52.94 | -6.2 | +3.3 | - | **-** | - | - | - |
| PT | - | **-** | - | - | - | 0.56 | **0.58** | 0.57 | +2.9 | +0.5 |
| RO | 26.93 | **42.15** | 34.76 | +56.5 | +21.2 | 1.37 | **1.60** | 1.53 | +17.3 | +4.8 |
| SE | 55.78 | **55.87** | 56.99 | +0.2 | -2.0 | - | **-** | **-** | - | - |
| SI | - | **-** | - | - | - | - | **-** | - | - | - |
| SK | 45.41 | **57.50** | 56.35 | +26.6 | +2.0 | 2.19 | **2.30** | 2.21 | +5.2 | +4.0 |
| UK | 70.00 | **65.90** | 67.72 | -5.9 | -2.7 | - | **-** | - | - | - |

Notes: Yields are forecast for crops with more than 10000 ha per country; figures are rounded to 10 kg
Sources: 2008-2013 data come from DG AGRICULTURE short term Outlook data (dated June 2013, received on 09/07/2013), EUROSTAT Eurobase (last update: 28/06/2013) and EES (last update: 24/06/2013)
2013 yields come from MARS CROP YIELD FORECASTING SYSTEM (CGMS output up to 20/07/2013)

| Country | WHEAT (t/ha) | | | | | BARLEY (t/ha) | | | | | GRAIN MAIZE (t/ha) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2012 | 2013 | Avg 5yrs | %13/12 | %13/5yrs | 2012 | 2013 | Avg 5yrs | %13/12 | %13/5yrs | 2012 | 2013 | Avg 5yrs | %13/12 | %13/5yrs |
| BY | 3.50 | **3.83** | 3.44 | +9.4 | +11.3 | 3.23 | **3.44** | 3.24 | +6.5 | +6.2 | 5.26 | **6.34** | 5.17 | +20.5 | +22.6 |
| DZ | 1.76 | **1.72** | 1.50 | -2.5 | +15.0 | 1.54 | **1.65** | 1.36 | +7.0 | +21.7 | - | **-** | - | - | - |
| MA | 1.24 | **2.10** | 1.67 | +69.7 | +25.2 | 0.63 | **1.24** | 1.13 | +96.7 | +9.5 | - | **-** | - | - | - |
| TN | 1.93 | **1.55** | 1.86 | -19.5 | -16.3 | 1.16 | **0.94** | 1.26 | -18.6 | -25.0 | - | **-** | - | - | - |
| TR | 2.67 | **2.53** | 2.52 | -5.4 | +0.4 | 2.58 | **2.51** | 2.42 | -2.7 | +3.9 | 7.38 | **7.30** | 7.23 | -1.1 | +0.9 |
| UA | 2.80 | **3.02** | 3.12 | +7.9 | -3.2 | 2.11 | **2.26** | 2.39 | +7.3 | -5.2 | 4.79 | **5.11** | 5.09 | +6.8 | +0.4 |

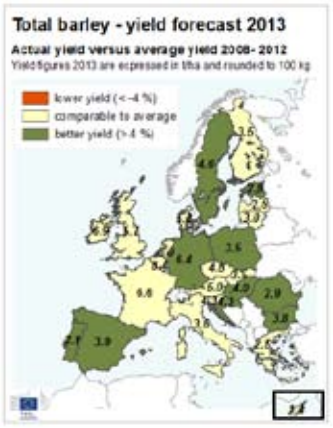
Notes: Yields are forecast for crops with more than 10000 ha per country; figures are rounded to 10 kg
Sources: 2008-2013 data come from FAO, PSD-online, INRA Maroc, MiniAGRI Tunisia and DSASI Algeria
2013 yields come from MARS CROP YIELD FORECASTING SYSTEM (CGMS output up to 20/07/2013)

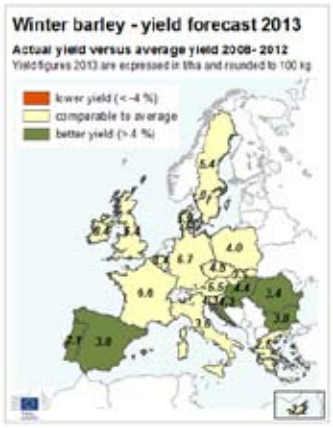
# Yield maps

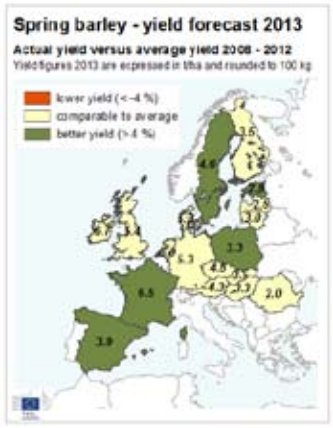

Total wheat - yield forecast 2013
Actual yield versus average yield 2008- 2012
Yield figures 2013 are expressed in t/ha and rounded to 100 kg
lower yield (< -4 %)
comparable to average
better yield (> 4 %)


Soft wheat - yield forecast 2013
Actual yield versus average yield 2008- 2012
Yield figures 2013 are expressed in t/ha and rounded to 100 kg
lower yield (< -4 %)
comparable to average
better yield (> 4 %)

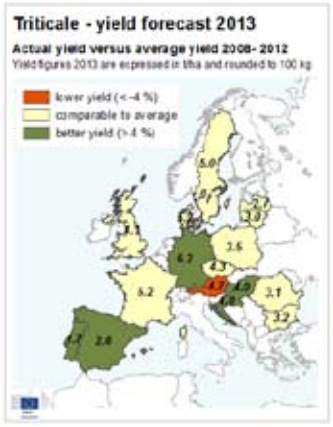

Durum wheat - yield forecast 2013
Actual yield versus average yield 2008 - 2012
Yield figures 2013 are expressed in t/ha and rounded to 100 kg
lower yield (< -4 %)
comparable to average
better yield (> 4 %)


Total barley - yield forecast 2013
Actual yield versus average yield 2008- 2012
Yield figures 2013 are expressed in t/ha and rounded to 100 kg
lower yield (< -4 %)
comparable to average
better yield (> 4 %)

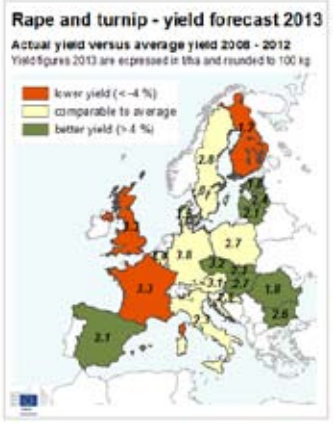

Winter barley - yield forecast 2013
Actual yield versus average yield 2008- 2012
Yield figures 2013 are expressed in t/ha and rounded to 100 kg
lower yield (< -4 %)
comparable to average
better yield (> 4 %)

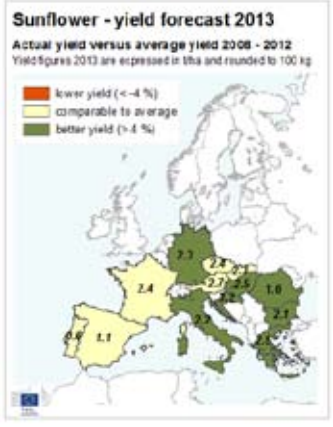

Spring barley - yield forecast 2013
Actual yield versus average yield 2008 - 2012
Yield figures 2013 are expressed in t/ha and rounded to 100 kg
lower yield (< -4 %)
comparable to average
better yield (> 4 %)

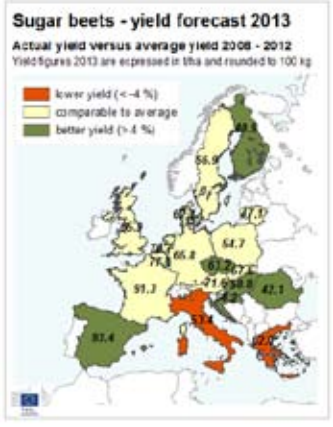

Rye - yield forecast 2013
Actual yield versus average yield 2008 - 2012
Yield figures 2013 are expressed in t/ha and rounded to 100 kg
lower yield (< -4 %)
comparable to average
better yield (> 4 %)


Triticale - yield forecast 2013
Actual yield versus average yield 2008- 2012
Yield figures 2013 are expressed in t/ha and rounded to 100 kg
lower yield (< -4 %)
comparable to average
better yield (> 4 %)


Grain maize - yield forecast 2013
Actual yield versus average yield 2008 - 2012
Yield figures 2013 are expressed in t/ha and rounded to 100 kg
lower yield (< -4 %)
comparable to average
better yield (> 4 %)


Rape and turnip - yield forecast 2013
Actual yield versus average yield 2008 - 2012
Yield figures 2013 are expressed in t/ha and rounded to 100 kg
lower yield (< -4 %)
comparable to average
better yield (> 4 %)

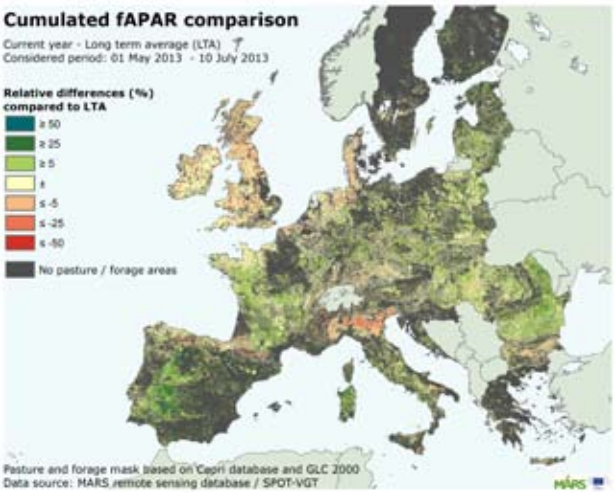

Sunflower - yield forecast 2013
Actual yield versus average yield 2008 - 2012
Yield figures 2013 are expressed in t/ha and rounded to 100 kg
lower yield (< -4 %)
comparable to average
better yield (> 4 %)

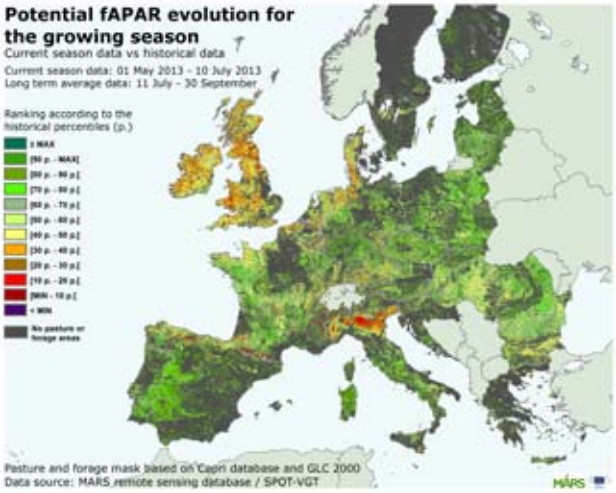

Sugar beets - yield forecast 2013
Actual yield versus average yield 2008 - 2012
Yield figures 2013 are expressed in t/ha and rounded to 100 kg
lower yield (< -4 %)
comparable to average
better yield (> 4 %)

# 5. Pastures in Europe - update remote sensing monitoring

## Above-average production in most of Europe after a chilly and humid first half of the year

*The formation of green biomass has increased in most of Europe during the past two months thanks to warm temperatures registered from mid-June. After a humid and cold spring, the current favourable weather conditions have led to high production levels in most EU countries, with the exception of the UK, Ireland and northern Italy.*



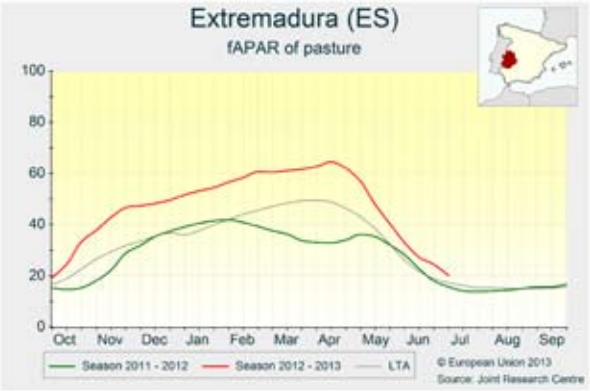

The current season has been quite positive for **Spain** and **Portugal**. Biomass production levels in the *Dehesa* area, in the south-west of the Iberian Peninsula, are the highest of the past 15 years. In the Cantabrian basin in northern Spain, the gradual increase in temperatures and the easing off of precipitation in the past month have permitted a rapid growth of grasslands. Expectations are also positive for the coming months. In **Italy**, pastures in central and southern regions show optimal development, thanks to the abundant precipitation received during the first half of the year, and the outlook for these areas is very positive. By contrast, the fodder maize areas of *Lombardia*, *Veneto* and *Piemonte* continue to suffer from a delay in crop development of about one month - this is directly linked to the negative effect of heavy rainfall during spring time on sowings. The warm temperatures observed from the end of June have permitted a slight recovery of that delay, but weather conditions during the coming month will be crucial to assess whether crop growth can reach seasonal values.

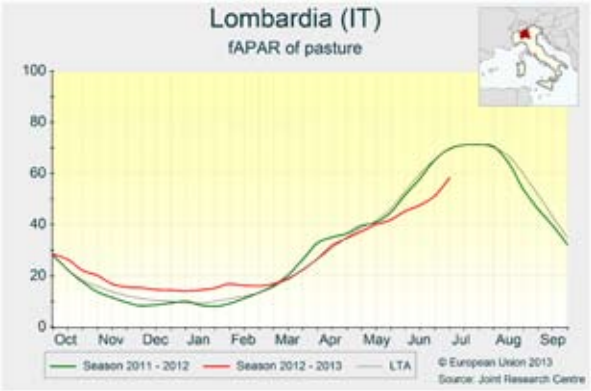
In **France**, a general improvement of pasture areas has been observed in the previous month, thanks to a decrease in precipitation and gradual rise in temperatures from the second half of June. In *Midi-Pyrénées*, *Auvergne* and the Atlantic basin, the condition of pastures remains favourable. Moreover, the areas most affected by the humid and cold spring in the north-east of the country have recovered average production levels.

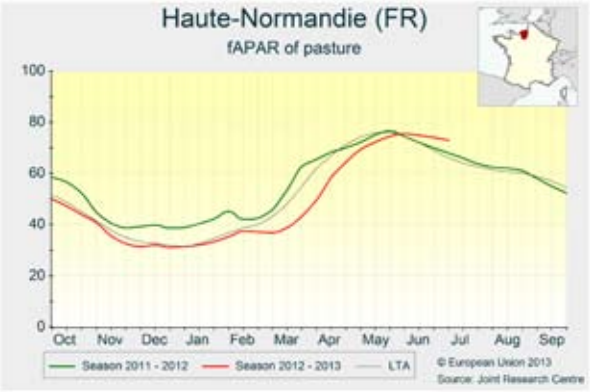
In the **Benelux**, favourable temperatures in the past month have also led to an improvement in biomass formation. Cold temperatures have characterised the growing season in the **UK**, **Ireland** and northernmost regions of **Germany**. Pasture development in these regions shows delay of about two weeks compared to an average season, and therefore the cumulative biomass production has been substantially below the seasonal values of the past two months. Final production levels in these areas will depend mostly on the temperatures of the forthcoming months, as soil moisture is currently sufficient to support pasture growth.

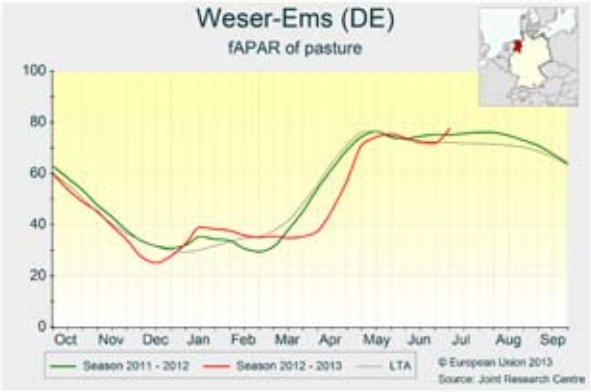
In southern **Germany**, **Austria**, the **Czech Republic** and **Slovakia**, the analysis of satellite imagery reveals, in general, above-average production levels. The huge amount of precipitation received during June has not hampered the vigour of grassland growth at the regional scale, Pasture growth in **Romania** and **Hungary** is also above average. Relatively mild temperatures and abundant precipitation – especially near the Black Sea – have led to the maintenance of high biomass production levels in these countries.

In **Poland** and the Baltic countries, the current growing season is one of the best in the past decade. After a delayed start to the season, favourable temperatures and precipitation during the past two months have boosted vegetation growth. The amount of biomass in grasslands substantially exceeds the values of an average year. Expectations are also quite favourable for the rest of the summer.

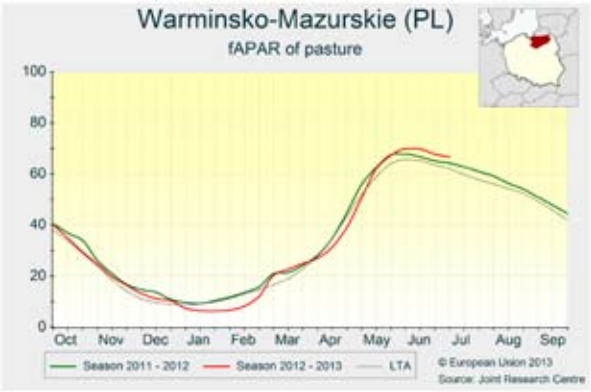

Extremadura (ES)
fAPAR of pasture
100
80
60
40
20
0
Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep
Season 2011 - 2012
Season 2012 - 2013
LTA
© European Union 2013
Source: Joint Research Centre


Lombardia (IT)
fAPAR of pasture
100
80
60
40
20
0
Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep
Season 2011 - 2012
Season 2012 - 2013
LTA
© European Union 2013
Source: Joint Research Centre


Haute-Normandie (FR)
fAPAR of pasture
100
80
60
40
20
0
Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep
Season 2011 - 2012
Season 2012 - 2013
LTA
© European Union 2013
Source: Joint Research Centre


Weser-Ems (DE)
fAPAR of pasture
100
80
60
40
20
0
Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep
Season 2011 - 2012
Season 2012 - 2013
LTA
© European Union 2013
Source: Joint Research Centre


Southern and Eastern (IE)
fAPAR of pasture
100
80
60
40
20
0
Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep
Season 2011 - 2012
Season 2012 - 2013
LTA
© European Union 2013
Source: Joint Research Centre


Warminsko-Mazurskie (PL)
fAPAR of pasture
100
80
60
40
20
0
Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep
Season 2011 - 2012
Season 2012 - 2013
LTA
© European Union 2013
Source: Joint Research Centre

# 6. Rice Monitoring in Europe

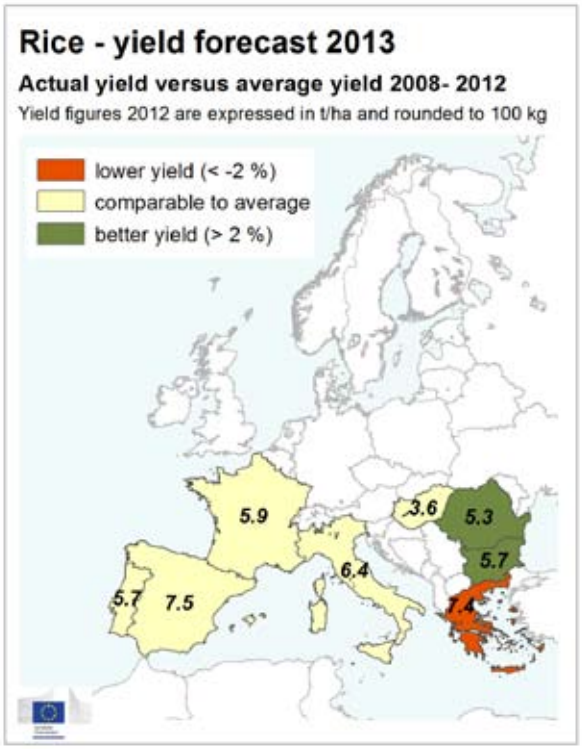
## Near-average yield is expected for the main EU Rice producers

*Rice production in the EU is forecast to be very similar to last year's figures as the area increase (+1.7%) is largely compensated by a decrease in yields of similar magnitude (-1.5%) at the EU-28 level. Overall, the yield forecast is almost 1% above the five-year average. The outlook is particularly positive for Bulgaria and Romania. Yields below the five-year average are forecast for Greece and Portugal. In Italy, the largest rice-producing country in the EU-28, yields are expected to be similar to those of last year, and 1% above the five-year average. In Spain, the second-largest rice producer, yields are not expected to reach the high levels of 2012, but will still be just above the five-year average.*

## EU-28 Rice yield forecasts

| Country | Yield t/ha | | | | |
|---|---|---|---|---|---|
| | 2012* | MARS 2013 forecasts | Avg 5yrs | %13/12 | %13/5yrs |
| EU28 | 6.72 | **6.62** | 6.57 | -1.5 | +0.8 |
| BG | 5.55 | **5.66** | 5.12 | +2.0 | +10.6 |
| ES | 7.76 | **7.50** | 7.45 | -3.4 | +0.6 |
| FR | 5.94 | **5.93** | 5.85 | -0.1 | +1.5 |
| GR | 8.21 | **7.40** | 7.56 | -9.9 | -2.2 |
| HU | 3.60 | **3.64** | 3.64 | +1.2 | +0.0 |
| IT | 6.42 | **6.42** | 6.35 | +0.0 | +1.0 |
| PT | 5.86 | **5.74** | 5.79 | -2.0 | -0.9 |
| RO | 5.15 | **5.27** | 5.13 | +2.4 | +2.8 |

Released: 19 July 2013
Sources: 2008-2013 data come from EUROSTAT Eurobase (last update: 28/06/2013) and EES (last update: 24/06/2013)
2013 yields come from MARS CROP YIELD FORECASTING SYSTEM (CGMS output up to10/07/2013)

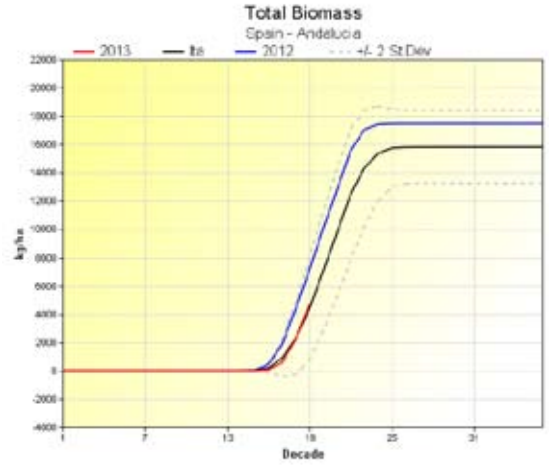


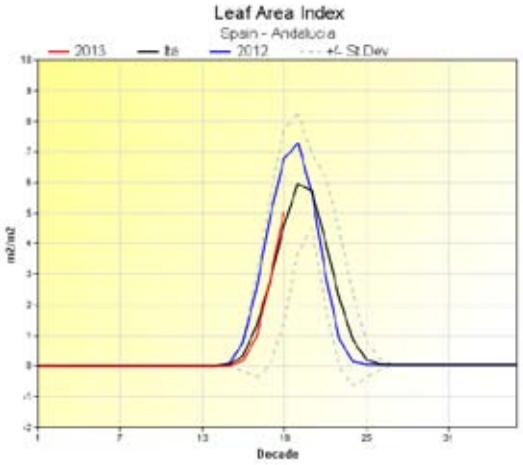

A good yield is expected from the main rice-producing districts in Bulgaria, Romania, Italy (Lombardia), Hungary, Spain and France, where prevailing meteorological conditions were favourable for biomass accumulation and the risk of biotic or abiotic damages affecting crop yield appears to be low.
The forecast for Portugal is less than the five-year average due to delayed growth induced by cold conditions that persisted until the end of June. Less-than-optimal conditions are also observed in Greece, where wet weather and high temperatures enhance the risk of blast infections, especially if temperatures continue to rise in the coming weeks.

# Spain

## Above-average crop yield expected

Meteorological conditions in the rice producing areas of Spain, comprising *Cataluña, Valenciana, Andalucia* and *Extremadura*, are good. Cumulated active temperature since the start of the growing season (in May) and global radiation are above the long-term average. Rainfall has also been well above-average and well distributed. Crop growth simulations suggest good canopy development providing a basis for good biomass accumulation. According to the model simulation the risk of fungal infection is very low. Therefore, the forecast for the current season is above the five-year average.

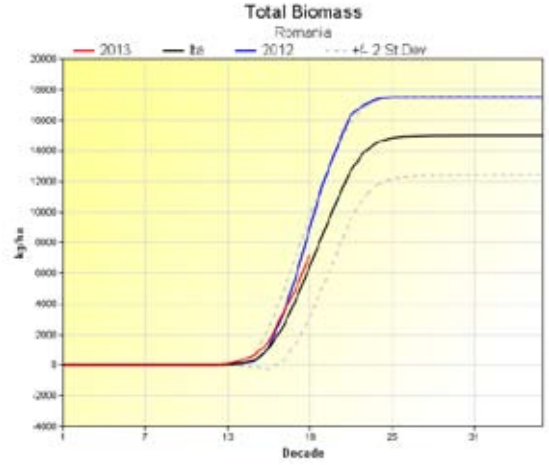


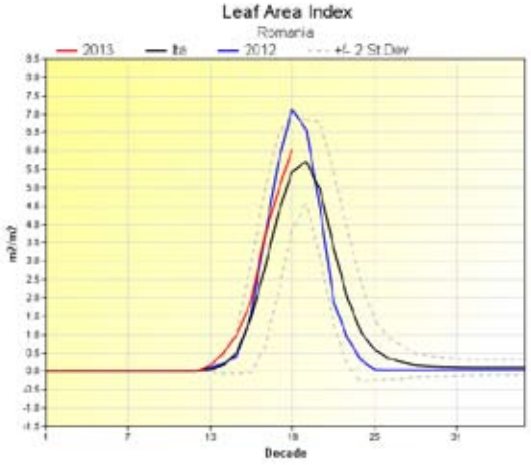




# Romania

## Favourable yield outlook

After a period of cold temperatures during the start of the growing season, especially in the south-east regions of Romania, weather conditions improved and currently the crop seems to have caught-up as indicated by good leaf area development and above average biomass accumulation. Overall, meteorological conditions are favourable, particularly average temperature and cumulated rainfall which are above the long-term average. The model predicts a very low risk of fungal infection. Hence, the yield forecast is set above the five-year average.

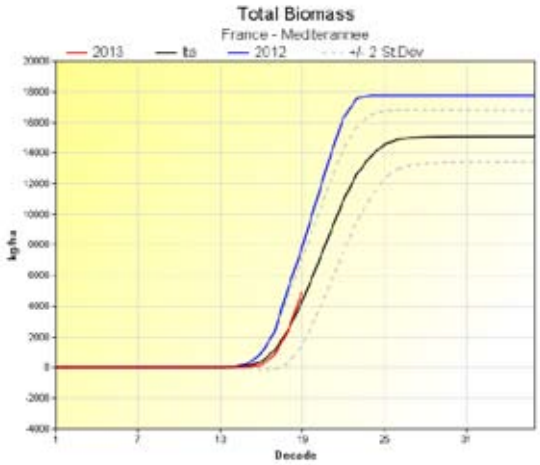


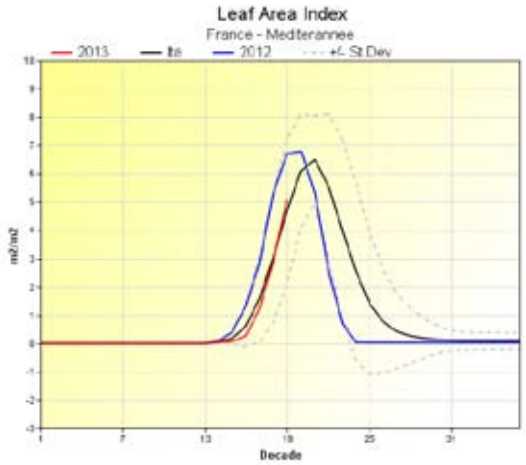



# France

## Normal growth after a delayed start

The growing season started with low temperatures in March causing a delay in crop development in the main rice producing areas in France (i.e. *Languedoc-Roussillon* and *Provence- Alpes - Cote D'azur*). The crop has now recovered and development is now close to long-term average. Since April, temperature development has been favourable and rainfall has been abundant and well distributed. Combined with adequate solar radiation these conditions led to normal leaf area expansion and biomass accumulation, as reflected in our simulations, thus suggesting a good yield outlook. Good crop growth is also evident from well above-average green biomass accumulation inferred from satellite images. The model calculations also suggest very low risks of fungal infection on the basis of humidity and air temperature. Under this scenario, the forecast is set above the long-term average.

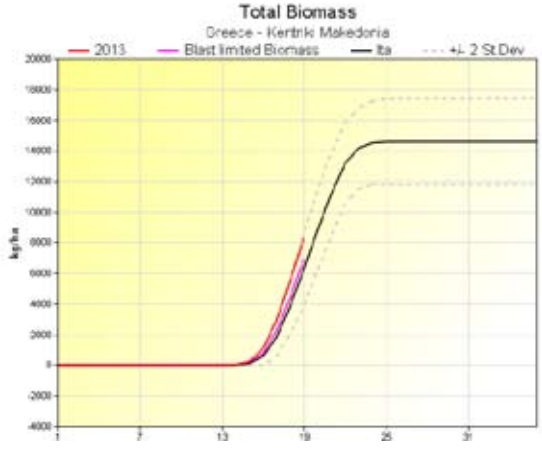


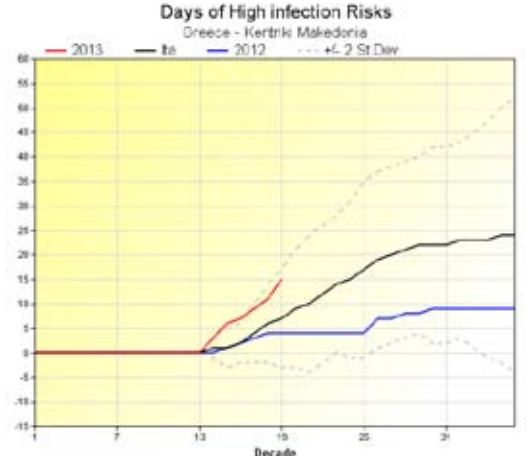




# Greece

## Below-average yields expected due to high infection risks

Favourable temperatures, solar radiation and abundant rainfall at the start of the growing season set a promising scene for optimal crop growth and development. The simulated values for total biomass production and leaf area are above the long-term average. However, the same weather conditions have also been conducive to blast infections (see graph below) which are likely to reduce crop yields if humid warm conditions persist. Therefore, the yield forecast is set below the 5-year average.

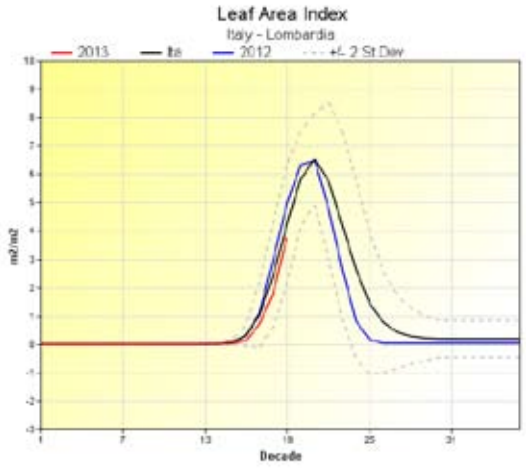


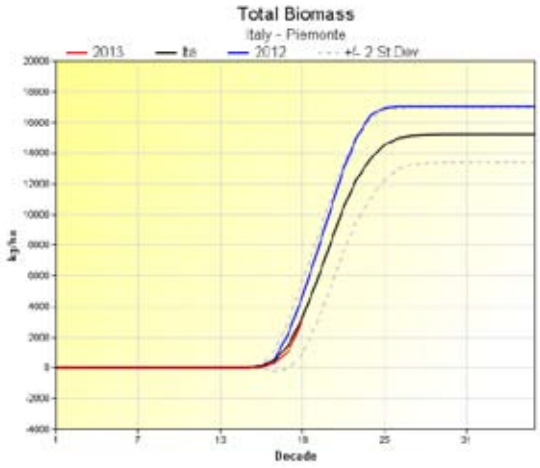



# Italy

## Close to normal crop development after a delayed start

Cold and wet conditions characterized the beginning of the season in *Piemonte* and *Lombardia*. The heavy rainfall in April and May (more than 100 m higher than normal) have hampered field activities and have strongly delayed sowing preparation works. Cold weather conditions continued until the first decade of June, mainly in northern Italy, leading to a slight delay in crop development. Weather conditions have improved since then, and since the end of June, temperatures have been around average, allowing near average leaf area development and biomass accumulation. Fungal infection risk has been low. Water shortage is also unlikely to occur, because of abundant rainfall in previous months. In accordance with these model results, the yield forecast was set close to the five-year average.

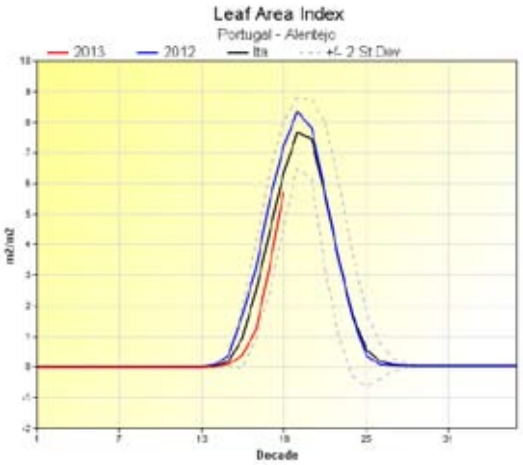


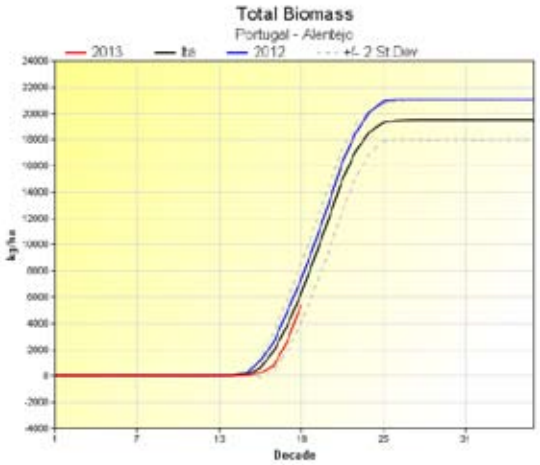




# Portugal

## Crop growth conditions below the average

Persistent below-average temperatures until June led to a delay in crop development. This is reflected in the model simulations by below-average leaf area development and biomass accumulation; as well as a very low risk of fungal infection. The increasing temperatures during July allowed good growth conditions. In accordance to our model results, the yield forecast is set just below the average of the last five years.

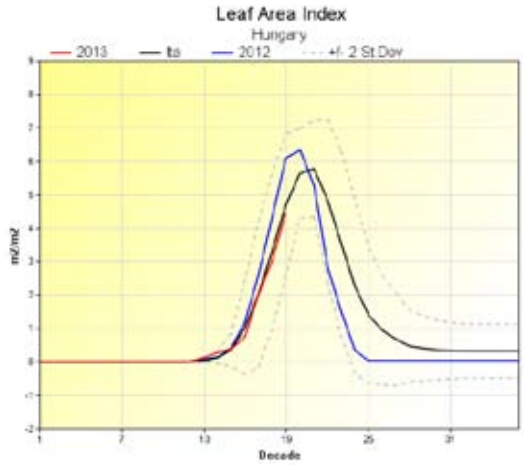


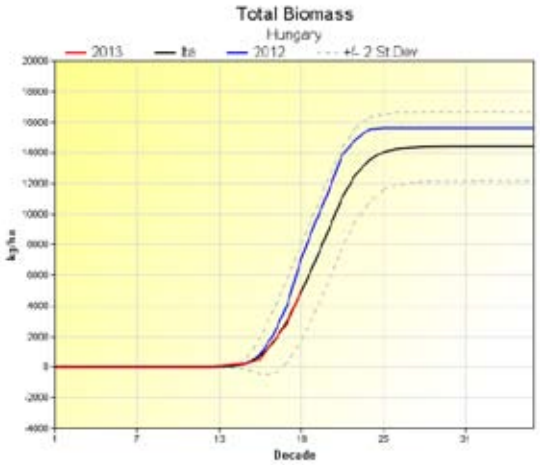



# Hungary

## Average conditions

Overall meteorological conditions have been favourable in Hungary, with average temperatures and rainfall since the beginning of May. Model simulations suggest average crop development and leaf area development, depicting a good start of the season. Average yields are expected.

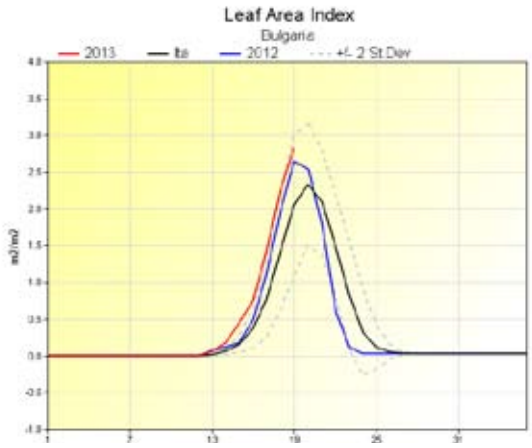


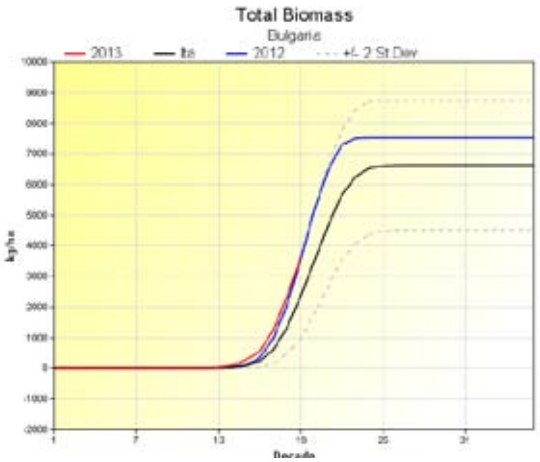




# Bulgaria

## Good scenario for high crop yields

Favourable temperatures and abundant rainfall during the start of the crop season set a promising scenario for optimal crop growth and development. This is also reflected in our model simulations which show above-average leaf area development and biomass accumulation. The forecast is above the five-year average value.



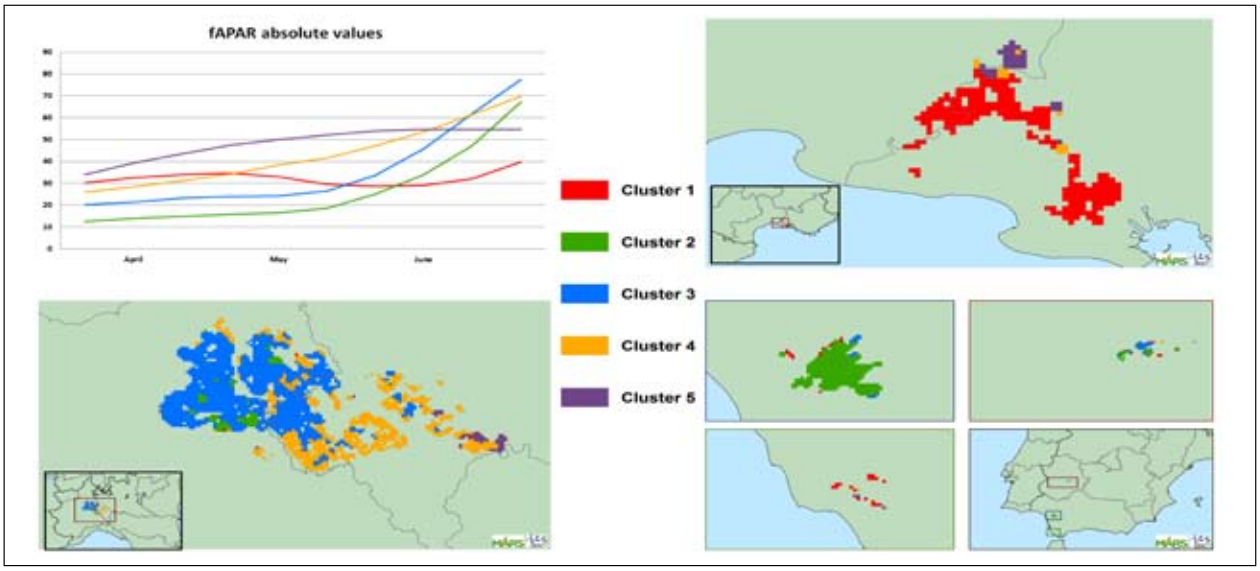



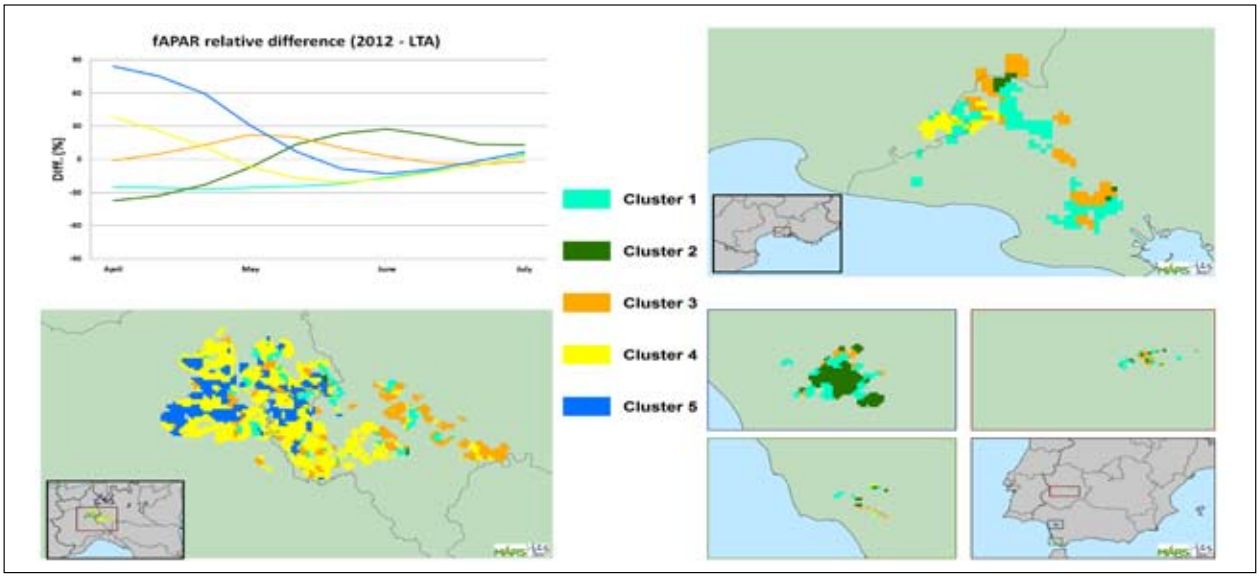
# Remote Sensing - observed rice conditions

The methodology used in the remote sensing analysis is an Iso-clustering procedure. The algorithm identifies groups of pixels that, in the source images, behave in a similar way in terms of fAPAR (fraction of Absorbed Photosynthetically Active Radiation) values. The first of the cluster maps below displays the fAPAR time series from 1 April 2013 to the 10 July 2013. The regions represented are the most relevant in Europe. In *Piemonte* and *Lombardia* (**Italy**) the rice sowing was quite late compared to a normal year: the causes were low temperatures and abundant rains during April. Two main areas with slightly different canopy behaviour are visible in the map: the rice fields in cluster 2 are slightly advanced compared to those in cluster 3, but both are still far from the flowering stages. The canopy development of a relative minority of the rice fields (cluster 1) is even more delayed compared to the other two regions. In **France**, the fAPAR indicator for rice fields shows scattered behaviour. Large areas were not sown at all (see purple profile, cluster 5), while the remaining fields still show low fAPAR values. In **Spain**, rice growth only started in late June after late sowing periods that began in May in *Andalucia* (see red profile, cluster 1) and in late May in *Extremadura* (green profile, cluster 2). The purple areas represent marginal areas that were not sown. The second set of cluster maps display the relative differences between the fAPAR values of the current season and the ones of the long-term average (LTA: 1998-2012). In the graph, zero represents agreement with average values, and negative or positive values depict the relative intensity of the fAPAR anomalies. In **Italy**, the main regions suffered from a delayed start to biomass development. Warm temperatures experienced during the recent weeks reduced the growth delay in all rice districts (see orange and light blue profiles) the same behaviour can be observed for the *Andalucía* rice regions in **Spain** while seasonal conditions are present in *Extremadura*. In **France**, registered values are about average (green profile). Cluster five represents marginal regions that have not been sown and are therefore not presented in the maps.

Data used from: MARS remote sensing database \ SPOT-VGT.

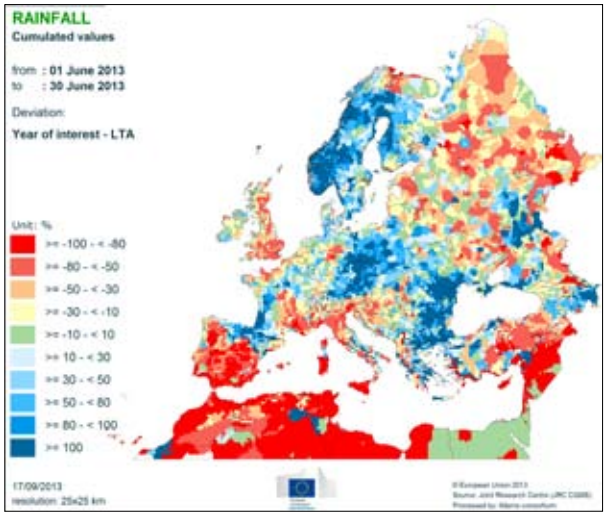
Rice Mask from CLC 2000

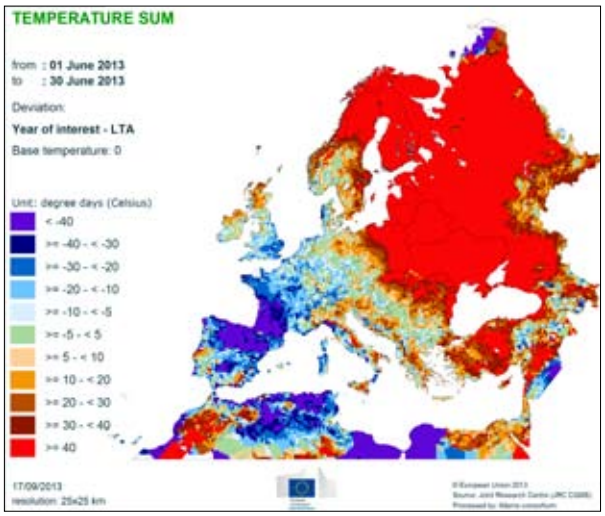


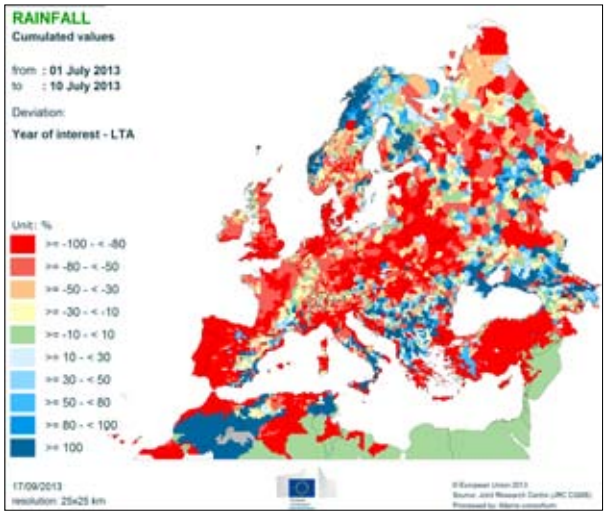



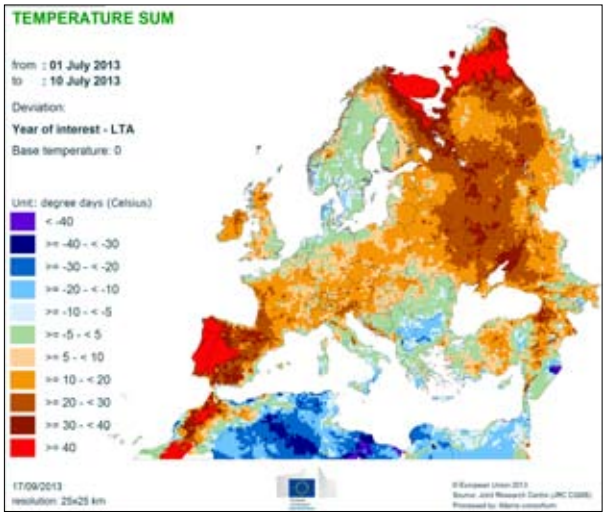
# 7. Atlas maps

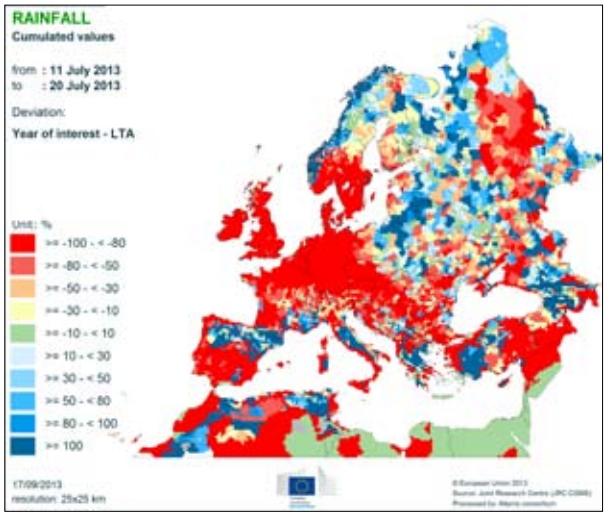
## Precipitation and temperature regime

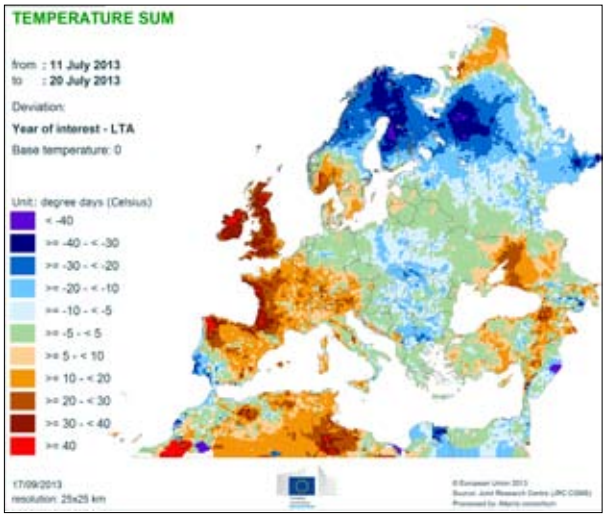


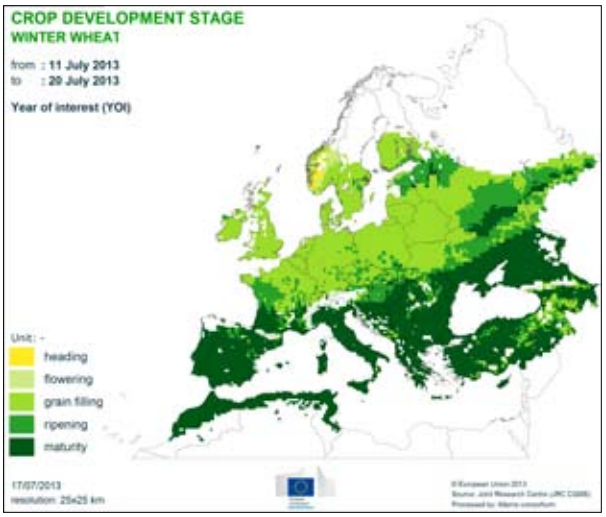



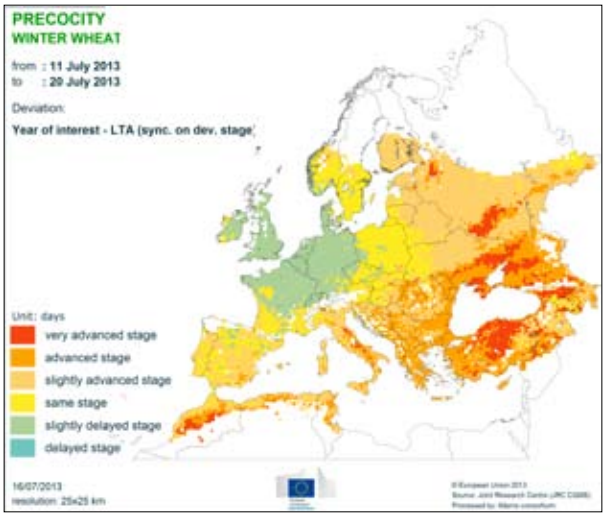



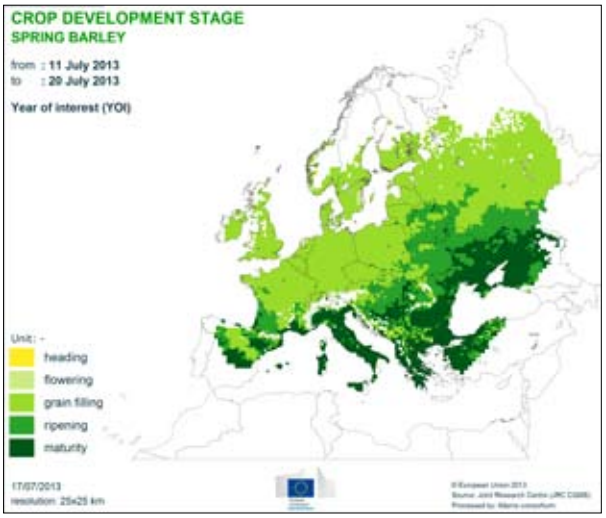



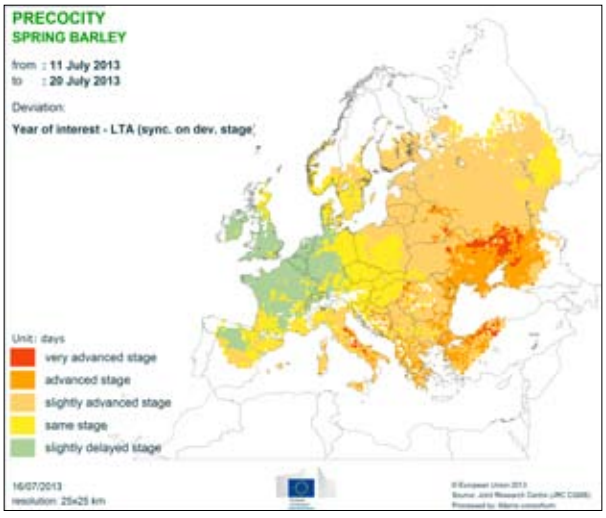



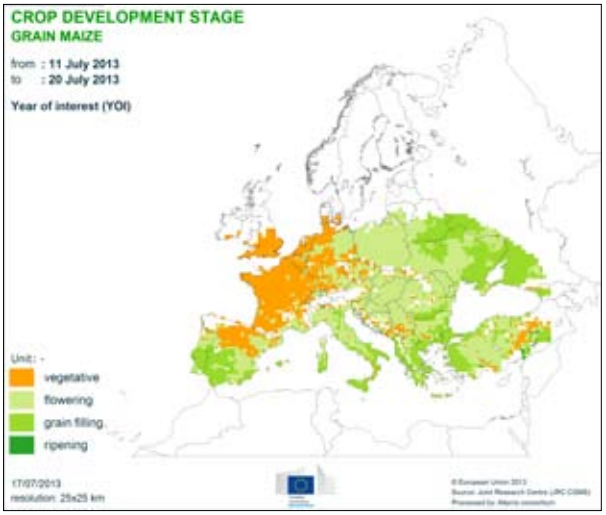
# Crop development stages and precocity

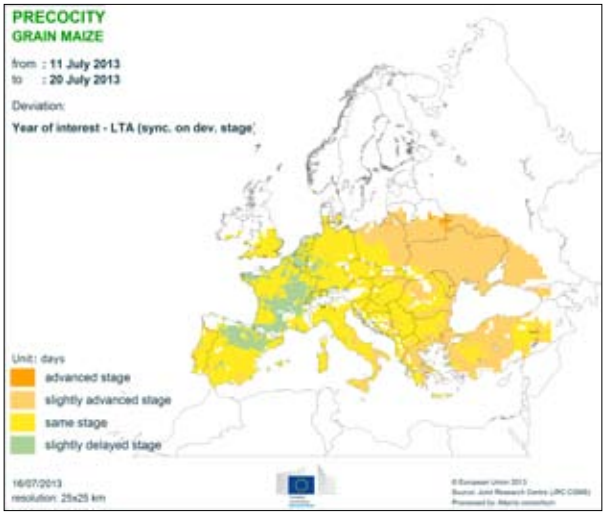


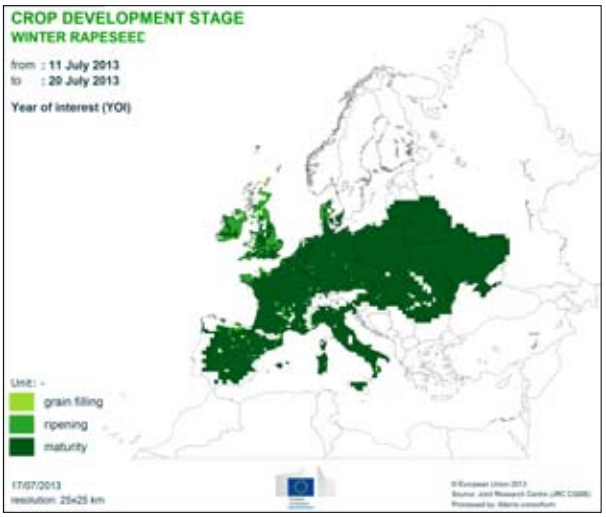



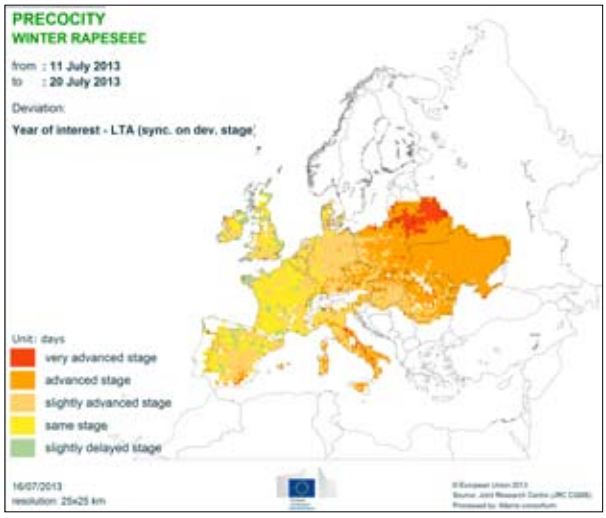



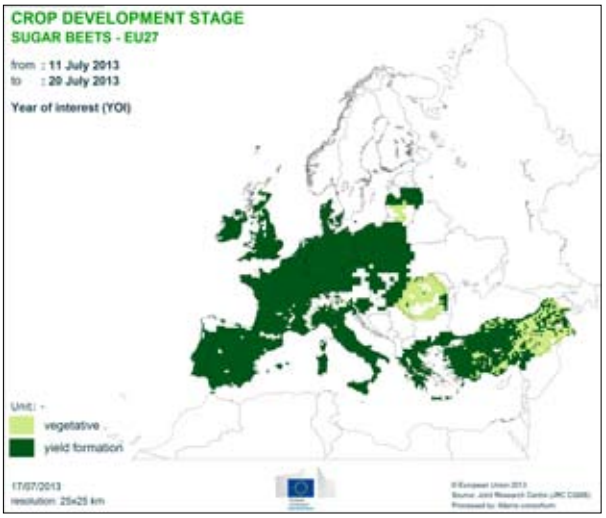



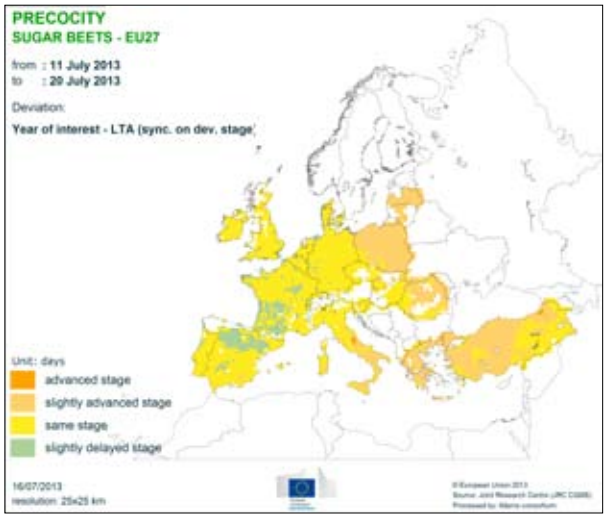



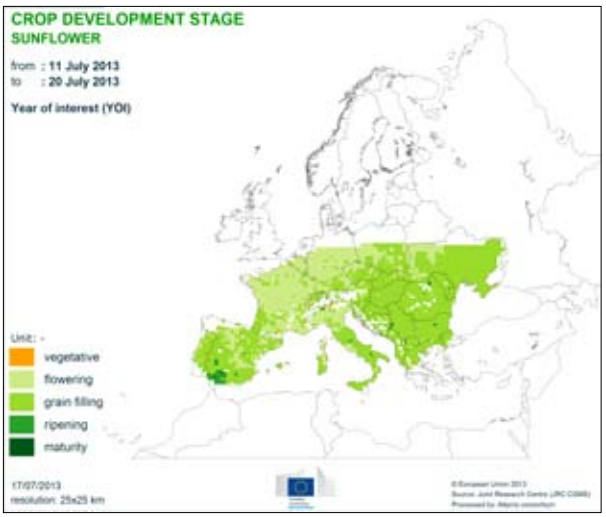



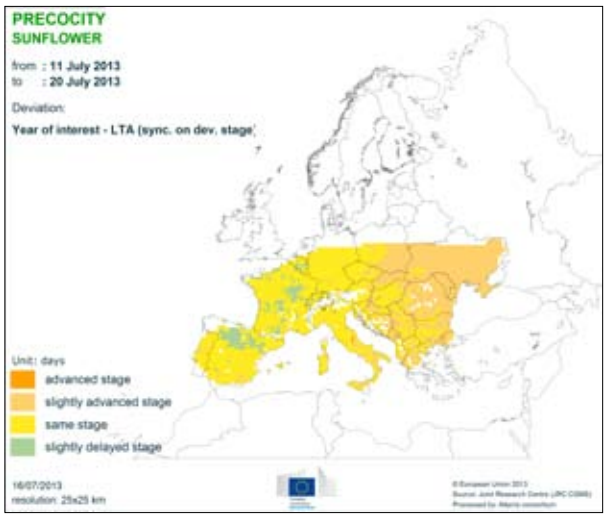

CROP DEVELOPMENT STAGE
WINTER RAPESEEC
from : 11 July 2013
to : 20 July 2013
Year of interest (YOI)
Unit: -
grain filling
ripening
maturity
17/07/2013
resolution: 25x25 km


PRECOCITY
WINTER RAPESEEC
from : 11 July 2013
to : 20 July 2013
Deviation:
Year of interest - LTA (sync. on dev. stage)
Unit: days
very advanced stage
advanced stage
slightly advanced stage
same stage
slightly delayed stage
16/07/2013
resolution: 25x25 km

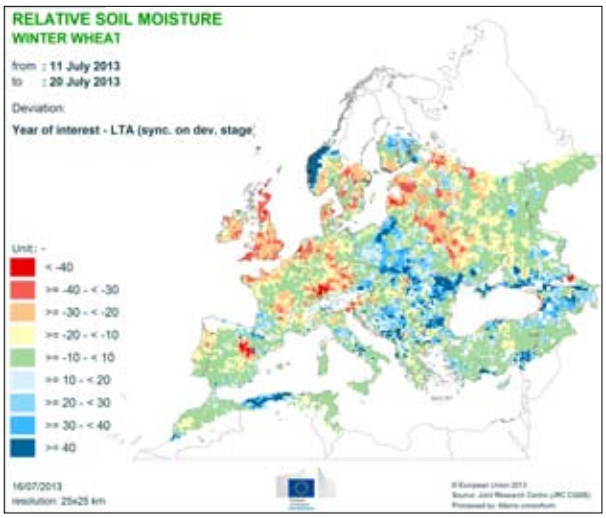

CROP DEVELOPMENT STAGE
SUGAR BEETS - EU27
from : 11 July 2013
to : 20 July 2013
Year of interest (YOI)
Unit: -
vegetative
yield formation
17/07/2013
resolution: 25x25 km

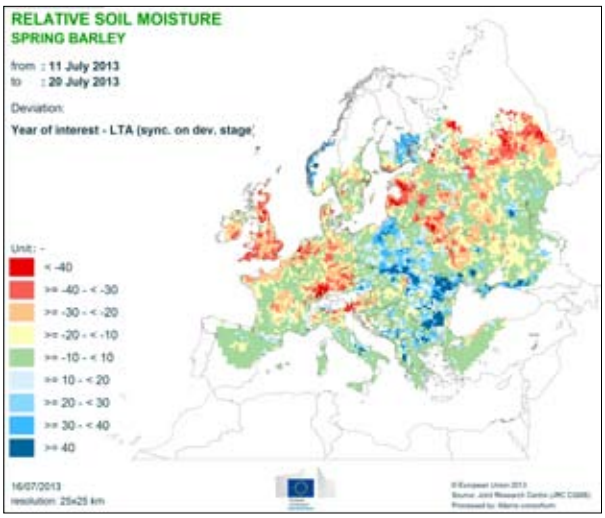

PRECOCITY
SUGAR BEETS - EU27
from : 11 July 2013
to : 20 July 2013
Deviation:
Year of interest - LTA (sync. on dev. stage)
Unit: days
advanced stage
slightly advanced stage
same stage
slightly delayed stage
16/07/2013
resolution: 25x25 km

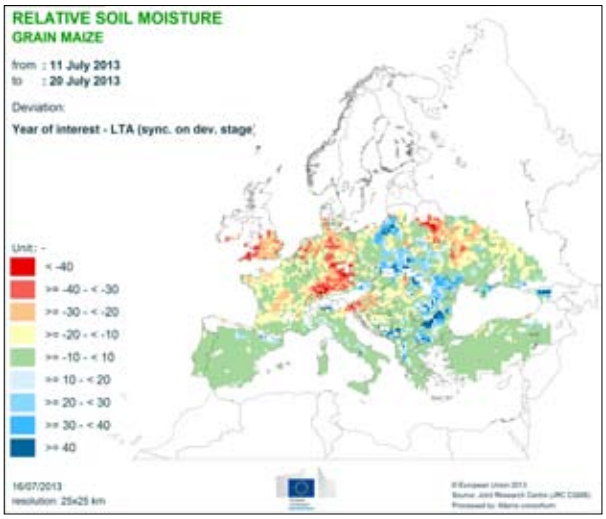

CROP DEVELOPMENT STAGE
SUNFLOWER
from : 11 July 2013
to : 20 July 2013
Year of interest (YOI)
Unit: -
vegetative
flowering
grain filling
ripening
maturity
17/07/2013
resolution: 25x25 km

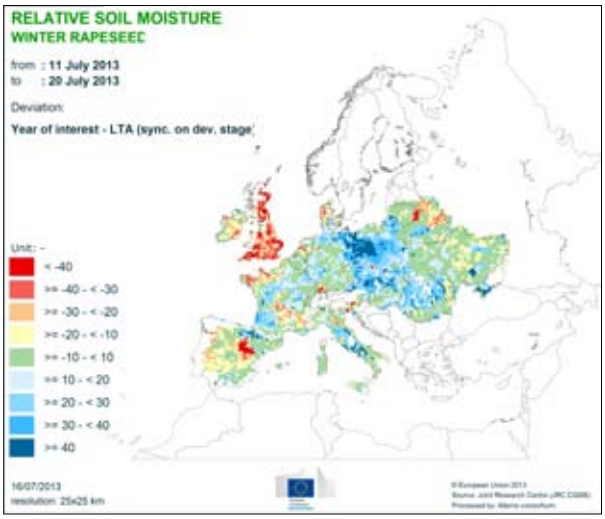

PRECOCITY
SUNFLOWER
from : 11 July 2013
to : 20 July 2013
Deviation:
Year of interest - LTA (sync. on dev. stage)
Unit: days
advanced stage
slightly advanced stage
same stage
slightly delayed stage
16/07/2013
resolution: 25x25 km

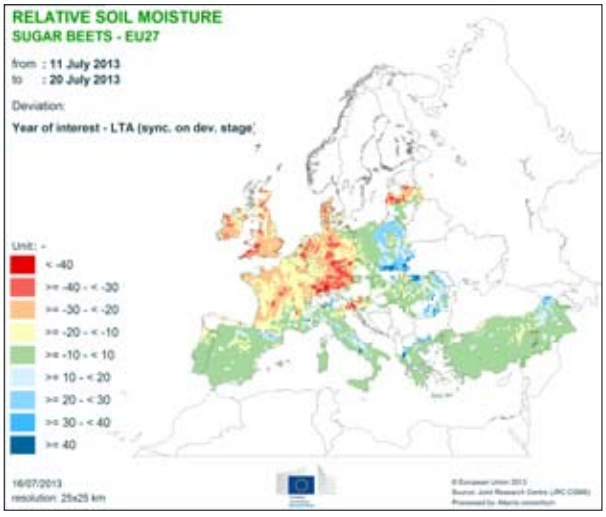
# Relative soil moisture

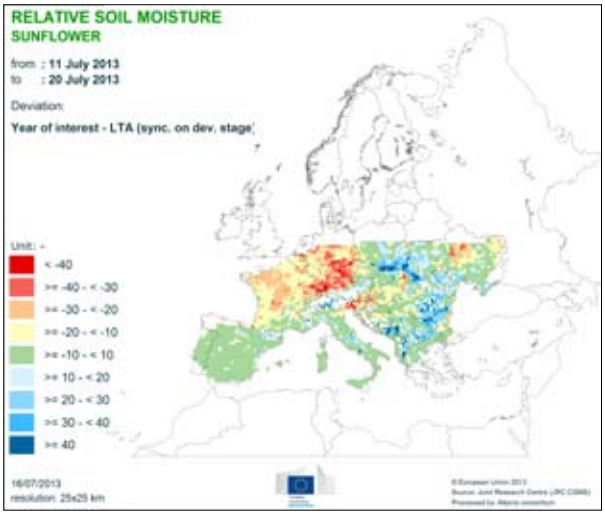


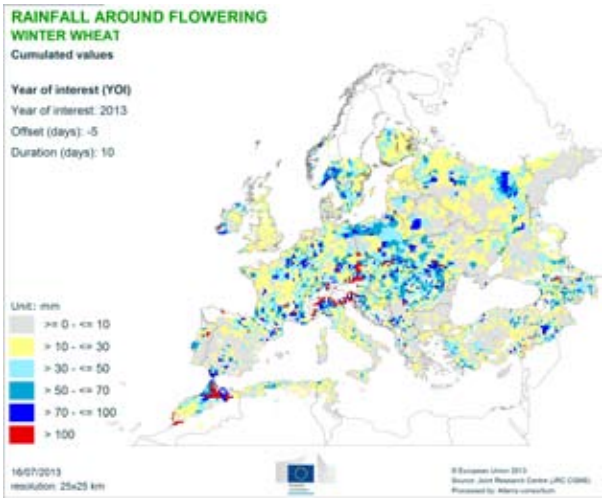



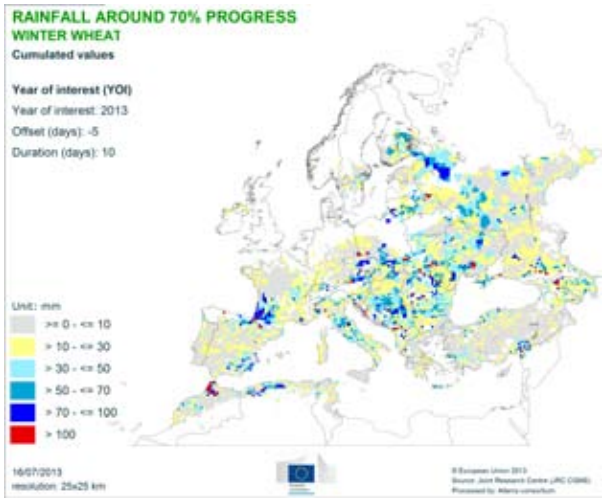



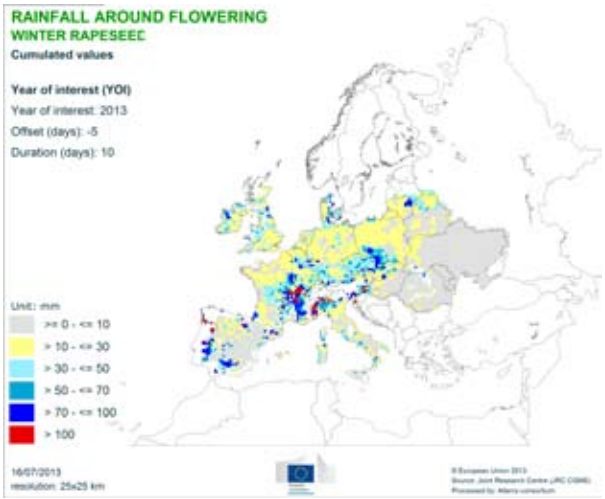



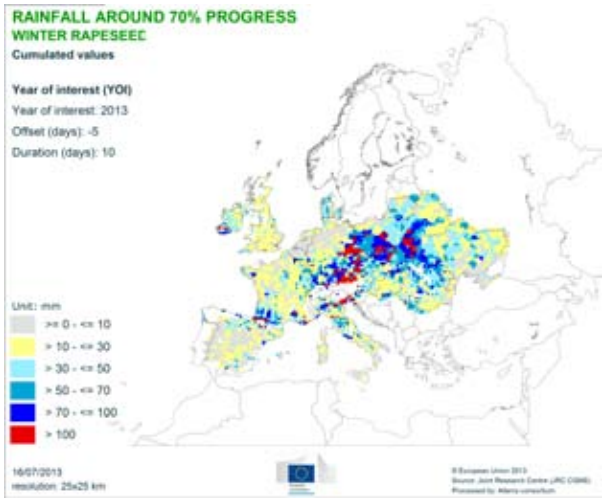



## Rain around crop development stage

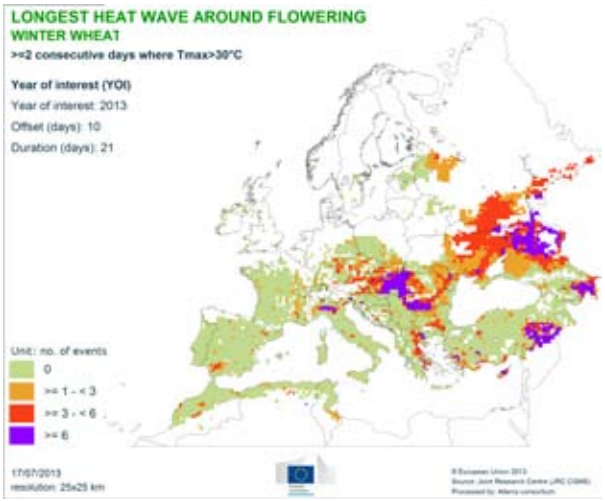


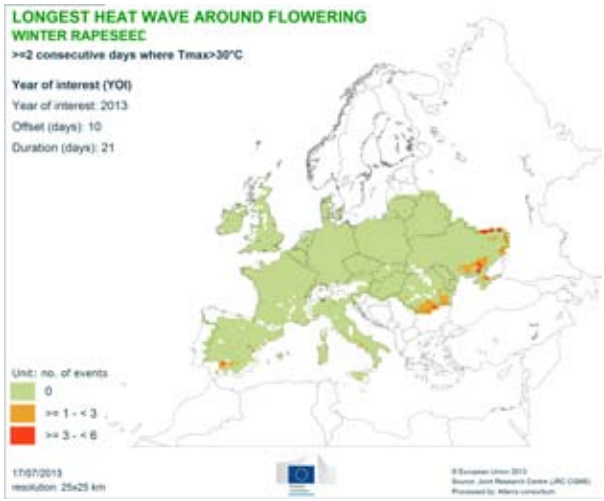




## Longest heat wave around crop development stage



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| Date | Publication | Reference |
|---|---|---|
| 21 Jan | Agromet. analysis | Vol. 21 No. 1 |
| 25 Feb | Agromet. analysis | Vol. 21 No. 2 |
| 25 Mar | Agromet. analysis and yield forecast | Vol. 21 No. 3 |
| 22 Apr | Agromet. analysis, remote sensing analysis, and yield forecast | Vol. 21 No. 4 |
| 21 May | Agromet. analysis, remote sensing analysis, and yield forecast, pasture analysis | Vol. 21 No. 5 |
| 17 Jun | Agromet. analysis, remote sensing analysis, and yield forecast, pasture update | Vol. 21 No. 6 |
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| 26 Aug | Agromet. analysis and yield forecast, pasture update | Vol. 21 No. 8 |
| 16 Sep | Agromet. analysis, remote sensing analysis and yield forecast, pasture update | Vol. 21 No. 9 |
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### Technical note:
The long term average (LTA) used within this Bulletin as a reference is based on an archive of data covering 1975-2012.

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